EXHIBIT 7

REDACTED

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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

IN RE GOOGLE PLAY STORE ANTITRUST LITIGATION THIS DOCUMENT RELATES TO: *In re Google Play Consumer Antitrust Litigation*, Case No. 3:20-cv-05761-JD *In re Google Play Developer Antitrust Litigation*, Case No. 3:20-cv-05792-JD	Case No. 3:21-md-02981-JD

EXPERT REPORT OF DR. MICHELLE M. BURTIS

March 31, 2022

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I. INTRODUCTION AND ASSIGNMENT

1. I am a Senior Consultant at Charles River Associates, an economic and finance consulting firm with offices in the United States as well as internationally. I have a Ph.D. in Economics from the University of Texas at Austin and have published in the field of economics.

2. In my work, I have studied and analyzed various forms of business conduct and how that conduct may affect the performance of markets and individual firms. I have analyzed such business conduct in antitrust cases, in other forms of commercial litigation, and in government regulatory proceedings. My analyses have included instances of conduct related to conspiracies, such as price fixing and bid-rigging, tying, monopolization, and monopsonization. I have also analyzed issues related to whether certain antitrust allegations, such as price-fixing and tying, can be addressed with common evidence or must be addressed through individualized inquiry and have published articles related to those issues. I have submitted testimony in the courts and in private arbitrations. I have taught undergraduate microeconomics at the University of Texas and graduate economics at George Mason University. A copy of my curriculum vitae, including a list of matters in which I have testified as an expert in the past five years, is included as Appendix A. My normal and customary billing rate is $900 per hour. My compensation is not contingent or based on the content of my opinions or the outcome of this matter.

3. I have been asked by counsel for the Defendants Google LLC, Google Ireland Ltd., Google Commerce Ltd., Google Asia Pacific Pte. Ltd and Google Payment Corp. (collectively, "Google") to review and respond to the opinions offered in the expert reports of Dr. David S. Sibley,[1] Dr. Michael A. Williams,[2] and Dr. Hal Singer,[3] in which they assert that Plaintiffs can determine the fact of antitrust injury and measure alleged damages using common evidence and common methodology for all proposed class members, as well as to address economic considerations regarding whether doing so is possible.

4. To prepare this report I have relied on the materials and sources listed in the Appendix B.

5. The remainder of this report is organized as follows. Section II includes a summary of my opinions regarding Developer Plaintiffs' and Consumer Plaintiffs' claims of class wide impact. Section III summarizes assumptions. Section IV provides background information about the products at issue (e.g., apps, subscriptions, and IAPs), Google Play, and proposed class members. Section V describes the economic framework I used to analyze Plaintiffs' claims of classwide antitrust impact. Section VI describes the economic reasons and evidence contradicting Consumer Plaintiffs' and Developer Plaintiffs' claims of classwide impact. Section VII discusses the Developer Plaintiffs' experts' opinions and analyses and describes why they fail to prove classwide impact using common evidence. Section VIII discusses the Consumer Plaintiffs' expert's opinions and analyses and describes why they fail

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[1] Expert Report of Dr. David. S. Sibley, February 28, 2022, *In Re Google Play Developer Antitrust Litigation*, Case No. 3:20-cv-05792-JD ("Sibley Report").

[2] Expert Report of Dr. Michael A. Williams, February 28, 2022, *In Re Google Play Developer Antitrust Litigation*, Case No. 3:20-cv-05792-JD ("Williams Report").

[3] Expert Report of Dr. Hal J. Singer, February 28, 2022, *In Re Google Play Consumer Antitrust Litigation*, Case No. 3:20-cv-05761-JD and Case No. 3:21-md-02981-JD ("Singer Report").

to prove classwide impact using common evidence. Section IX discusses Plaintiffs' experts' opinions regarding Google Play Points. Section X concludes.

II. SUMMARY OF OPINIONS

6. Two proposed classes – a proposed developer class and a proposed consumer class –allege that they were impacted by Google Play's alleged anticompetitive conduct in certain alleged relevant antitrust markets.

7. The primary issue addressed in this report is whether all members of each of the two proposed classes were negatively impacted by Google's alleged conduct ("classwide impact") and whether classwide impact can be proven with common evidence. For the reasons explained below, classwide impact cannot be established using predominantly common evidence for either the proposed class of developers or the proposed class of consumers.

8. Developer Plaintiffs claim to represent a class of U.S. Developers that paid a service fee of greater than 15% on the sale of apps, subscriptions, or in-app products ("IAPs") in the Google Play store ("Google Play").[4] Developer Plaintiffs claim that absent the alleged conduct, Google Play's service fees would have been lower and that developer class members' injury is equal to the difference between the service fees they paid in the actual world and the allegedly lower service fees they would have paid in the "but-for" world.

9. Consumer Plaintiffs claim to represent a class of consumers in the U.S. who made purchases of apps, subscriptions, and IAPs in Google Play. Consumer Plaintiffs claim that the alleged anticompetitive conduct led to higher service fees and that those higher fees were largely passed through to them in higher prices for app, subscription, and IAPs. Consumer Plaintiffs' experts alternatively assert that, in a world where Google faced more competition, Google would have provided consumers with more "loyalty points" in Google's Play Points program.

10. As an initial matter, individualized analysis is needed to identify members of the putative developer class. Developer Plaintiffs define a class of "U.S." developers (including additional criteria such having apps with payments, rather than free apps), but have not stated what constitutes a "U.S." developer in their proposed class definition. Developer Plaintiffs' expert identifies members of the proposed developer class using a [redacted][5] Developer Plaintiffs have no way, without engaging in an individualized inquiry into the circumstances of each developer in the database, to identify which members of their proposed class are "U.S." developers.

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[4] Second Amended Consolidated Class Action Complaint for Violation of the Sherman and Clayton Acts (15 U.S.C. ¶¶ 1, 2, 3, 15, 26), Cartwright Act (Cal. Bus. & Prof. Code ¶¶ 16700 et seq.) and Unfair Competition Law (Cal. Bus. & Prof. Code ¶¶17200 et seq.), January 21, 2022 ("Developer Complaint") at ¶244.

[5] See Appendix C for details.

A. DEVELOPER PLAINTIFFS' AND CONSUMER PLAINTIFFS' CLAIMS OF CLASSWIDE ANTITRUST IMPACT DEPEND ON SHOWING THE SERVICE FEE RATES FOR ALL DEVELOPERS AND APPS WOULD BE LOWER IN THE BUT-FOR WORLD

11. Developer Plaintiffs' and Consumer Plaintiffs' claims of classwide antitrust impact depend on showing that there would be a reduction in service fees for all developers. Consumer Plaintiffs assert that the service fee reduction would be passed on in lower prices for apps, subscriptions, and IAPs. Developer Plaintiffs assert that the reduction generally would not be passed on to consumers in the form of lower prices. Developer Plaintiffs experts claim that service fee rates would not only be lower in the but-for world but would be uniform across all apps and developers. Consumer Plaintiffs expert offers two alternatives: either there would be one service fee rate reduction for paid apps and a different rate reduction for subscriptions and IAPs, or there would be a single rate reduction for all transactions, apps, and developers.

12. Economic evidence demonstrates that not all service fee rates would fall or be uniform in Plaintiffs' but-for world and that determining which developers and which apps would obtain lower rates requires an individualized analysis of each developer and app.

13. Developer Plaintiffs' experts admit that, in the actual world, app stores reduce service fee rates for some, but not all apps and developers in response to competition. They note that Google Play, for example, reduced rates for certain media companies, [redacted] Economic evidence indicates a similar competitive dynamic by other app stores as well. [redacted]

14. Indeed, when Google Play and other app stores have reduced service fee rates, they have generally done so only for certain apps or developers. Targeted reduction of service fee rates by app stores reflects that some developers can negotiate lower service fees because they have popular apps that are valuable to Google Play and/or have business models or products that make them particularly well-suited to make use of other distribution or monetization options that do not involve payment of fees to Google. In the rare instances when an app store other than Google Play provided a lower service fee rate to all developers, the app stores' rivals, including but not limited to Google Play, did not respond in kind.

15. Thus, economic factors explain why competition in the actual world does not result in "across-the-board" rate reductions to all developers or for all apps. Plaintiffs' experts must address – but do not – that the economic factors explaining these dynamics in the actual world would also exist in the but-for world. Those characteristics include the unique circumstances of developers in terms of their business strategy and the relative popularity of their apps, which would continue to exist in the but-for world. Therefore, even assuming an increase in competition in a but-for world, some developers likely would be able to obtain lower rates or more services from app stores, but other developers would not.

16. Even assuming Plaintiffs' contention that in a but-for world, developers could use other billing systems and thereby avoid paying Google any service fees, some developers likely would not have a less expensive option for payment processing. Many payment processors charge a flat fee and a percentage fee for each transaction. For developers that set subscription or IAP prices at low price points – such as $0.99 – a flat fee such as $0.49

charged by PayPal plus a percentage fee add up to over 52% of the transaction price, far above Google Play's 30% service fee which covers not just payment processing, but additional services as well. This would be the case for the [redacted] of putative developer class members that sell apps, subscriptions, or IAPs *only* at prices of $0.99. Since those putative developer class members likely would not have a lower priced alternative for payment processing in a but-for world, their service fees would likely remain unchanged and therefore the prices that they set for the members of the proposed consumer class would remain unchanged as well. Developer Plaintiffs' experts do not address this issue at all. Consumer Plaintiffs' expert assumes, without any basis, that alternative payment processors' flat fees would not exist in the but-for world. If these [redacted] of putative developer class members would not have a less expensive payment processing option in the but-for world, then they are uninjured. Consumers who use those developers' apps also could not show that they would have paid a lower price in the but-for world and therefore are not injured.

17. Neither Developer Plaintiffs' experts nor Consumer Plaintiffs' expert provide an economic basis for their assumption that all developers' and all apps' service fee rates would be lower (and uniform) in the but-for world.

18. Developer Plaintiffs' expert, Dr. Sibley, assumes that in the but-for world an increase in competition would lead to lower rates for all developers. The assumption is contradicted by Dr. Sibley's own observation that in the actual world, certain developers took advantage of their ability to use other options for app distribution in order to – in his words – "resist" Google's alleged anticompetitive conduct and obtain competitive rates. Dr. Williams, another of Developer Plaintiffs' experts, adopts those actual-world rates as a competitive benchmark.

19. Dr. Sibley's other rationales for assuming all developers' rates would be lower in the but-for world are equally baseless. For example, he relies on an inaccurate and incomplete narrative about service fee rate changes among PC app stores. He claims that when the Epic Game Store entered with a lower rate, the Microsoft Store reduced its rate. But he fails to acknowledge that Microsoft's rate change came over two years after Epic Game Store's entry and fails to consider that another large PC app store, Steam, reduced rates for certain developers but not others. His claim that Google would not (or could not) set different service fees is contradicted by the fact that Google Play already sets rates differently for different developers, and that Google individually negotiates terms for certain developers. Dr. Sibley's assertion of uniformly lower service fee rates in the but-for world is at odds with economic theory showing that setting different prices can be optimal for firms and at odds with the reality that many firms in competitive industries utilize differential and increasingly sophisticated and complex pricing systems.

20. Consumer Plaintiffs' expert, Dr. Singer, similarly presents no economic basis or evidence to justify his assumption that service fee rates for all paid apps, all subscriptions, and all IAP would be lower in the but-for world. Dr. Singer's claim about lower service fee rates is based on mathematical calculations that simply assume that in the but-for world, an increase in competition will have the same effect on *all* apps and developers. By design, each of his calculations can return only a single but-for service fee rate – he allows for no other possibility. Thus, Dr. Singer has assumed that all service fee rates would be lower. He has not proposed a method for proving why this would be so for all or virtually all members of the putative consumer class.

B. Developer Plaintiffs' Claims Conflict with Consumer Plaintiffs' Claims of Antitrust Impact on Retail App, Subscription, and IAP Prices

21. Consumer Plaintiffs and Developer Plaintiffs have conflicting claims about antitrust impact as it relates to the prices of apps, subscriptions, and IAPs in the but-for world. Consumer Plaintiffs claim they were impacted by the alleged conduct because virtually all developers would have largely passed through lower service fee rates in the form of lower prices. Conversely, Developer Plaintiffs claim that very few prices would be lower in a but-for world with lower service fees.

22. Given the two sets of Plaintiffs' contradictory claims regarding prices and antitrust impact, a substantial portion of the two proposed classes' damages claims are duplicative of each other. Developer Plaintiffs claim impact and damages stemming from the difference between actual and but-for service fees, which they claim they would retain rather than pass through in the form of lower prices to consumers. Consumer Plaintiffs claim broadly the same impact and damages on the basis that developers would largely pass through any difference in service fees to them in the form of lower prices. As a result, the two proposed classes' damages claims double count much of the alleged overcharge.[6]

23. The economic evidence shows that the existence (or lack thereof) of pass-through is not a common issue for Consumer Plaintiffs or Developer Plaintiffs. Rather, my analysis shows that some but not all developers would pass through lower service fee rates to consumers and determining which prices would be lower requires an individualized app-by-app analysis. Although economic models can be used to identify certain variables that inform the issue of which prices are likely to be lower in the but-for world, those models are based on assumptions about the way developers set prices. In particular, the models assume that every developer will set a price to maximize short-term profits rather than longer-term goals, such as attempting to maximize the number of consumer downloads with low prices and then raising prices. Those assumptions do not hold for all developers but vary from developer to developer.

24. Furthermore, in economic models that assume short-term profit-maximization there are important supply and demand variables that determine whether a given developer will reduce prices when a service fee rate changes. These variables – for example, the marginal cost of apps and the price elasticity of demand for apps – vary across apps. Determining these variables for an app requires individualized analysis. For that reason, determining whether a service fee rate reduction would be passed through to consumers in the form of lower prices

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[6] Over the period August 2016 to December 2020 (a period common to both Plaintiffs' damage claims), Developer Plaintiffs' damage estimates range from [redacted]. Of those amounts, roughly [redacted] are related to sales to members of the putative consumer class. Over the same period, Consumer Plaintiffs' damage estimates range from [redacted]. Of those amounts, roughly [redacted] are related to purchases from members of the putative developer class. Given the two sets of Plaintiffs' contradictory claims regarding prices and antitrust impact, these Consumer Plaintiffs' damages related to purchases from Developer Plaintiffs are duplicative of the Developer Plaintiffs' damages related to sales to U.S. consumers. See this report's production.

also requires individualized analysis. Those assumptions do not hold for all developers but vary from developer to developer.

25. Developers' price-setting strategies are also highly relevant to the issue of pass-through. Many app developers set prices to end in "99" (e.g., $0.99, $1.99). Even if such a developer sets prices to maximize short-term profits, it does so subject to the constraint that it will change a price only if the change from one price that ends in "99" is more profitable than another price that ends in "99." This factor limits the extent to which developers will be inclined to reduce prices in the but-for world even if they obtain a lower service fee rate ("sticky prices").

26. The relevance of these economic factors to pass-through is confirmed by empirical evidence. The data produced by Google show that prices changed only for some of the apps, subscriptions, and IAPs that had a service fee rate change. Indeed, many of these apps, subscription, and IAP prices never change throughout the period for which they appear in the transaction data. That empirical evidence is consistent with the factors described above. Many apps are likely to have low (or close to zero) marginal costs and many developers' pricing strategies have an inherent stickiness.

27. Developer Plaintiffs' expert, Dr. Williams, analyzes some of the available Google data and similarly finds that few prices fall after a service fee rate change. But Dr. Williams' conclusion based on that data – that "pass-through of lower service fees is minimal in this market" – is overly broad, and he does not consider any of the economic factors that inform whether prices would be lower with lower service fee rates. Dr. Williams does not attempt to analyze the marginal costs of any app, the demand elasticity of any app, or the pricing strategy of any developer.

28. Consumer Plaintiffs' expert, Dr. Singer, adopts a different method for evaluating pass-through – one that generates demonstrably false results. Dr. Singer does not consider whether actual service fee rate changes have led to price changes in the actual world. Instead, he calculates a pass-through rate based on a simplistic formula derived from a certain model of demand: one minus the developer's share of sales of an app category. For example, if Dr. Singer identified a developer that offered an app in Google Play's Games category and calculated its share of Game sales as 1%, Dr. Singer would conclude that the pass-through rate for that game was 99% (i.e., (1- 0.01 = 0.99) or 99%). This calculation does not include service fees or prices for this app. Whether service fees fell for this app and led to lower prices – or did not – is not part of Dr. Singer's calculation. In this way, Dr. Singer finds about 95% of his pass-through rates are close to 100%; that is, nearly complete pass-through. Indeed, Dr. Singer's "method" would find pass-through for every developer unless that developer had a 100% share in its app category. Given that Dr. Singer used very broad app categories, with thousands of apps in many categories, where a single app does not have a 100% share, his method *guarantees* nearly universal positive pass-through rather than proves that it would occur for all apps.

29. Dr. Singer's method produces results that are verifiably wrong. Dr. Singer's method "finds" nearly complete pass-through for apps, subscriptions, and IAPs that had a service fee rate change in the actual world but whose prices did not change *at all*. Dr. Singer could have calculated pass-through rates from the actual data to determine whether his formula-based method produced reliable results to be used for a but-for world, but he did not.

30. Dr. Singer did not analyze any of the economic factors that inform the issue of pass-through. He did not attempt to estimate or investigate the cost conditions for any app (even though he sets out the theoretical result that there cannot be any pass-through of a service fee rate change if marginal cost is zero). He did not consider developers' pricing strategies, or the use of prices that end in "99." And he made unrealistic and unsupported assumptions about which apps are substitutes for each other. Instead, he relied on a simplistic formula that produces results that are wrong. His method is not capable of identifying those apps for which a service fee rate change leads to a price change, or the amount of any such pass-through.

31. Importantly, Dr. Singer's failure to offer a reliable method to determine pass-through rates invalidates his calculations related to but-for service fee rates, as well. Dr. Singer uses the average of his calculated pass-through rates to find what service fees would have been in a but-for world. Because his pass-through rates are based on a flawed methodology, his average pass-through rate is wrong, and his but-for service fee rates are necessarily flawed as well.

C. DEVELOPER PLAINTIFFS' FOCUS ON CLAIMED OVERCHARGES IGNORES CRITICAL FACTORS THAT MUST BE ANALYZED TO DETERMINE ANTITRUST IMPACT

32. Developer Plaintiffs' expert Dr. Williams contends that analyzing a developer's lost profits is not necessary to measure impact or damages because it would only show "additional" lost profits that would have been generated for a developer that passed through some (or all) of the service fee rate changes. This opinion is flawed for several reasons.

33. Dr. Williams' conclusion is based on the notion that the pass-through rates he has found are representative of *all* pass-through rates, even though he has done no study of any of the economic variables that are relevant to pass-through.

34. Moreover, developers' costs cannot be ignored in a lost profits analysis. [redacted] Dr. Williams ignores these facts and assumes that no developer's costs would be higher in the but-for world.

35. Dr. Williams further ignores that Google would have a strong economic incentive to change the way it monetizes Google Play in Plaintiffs' but-for world. Depending on how Google would change its monetization strategy, different developers could pay higher or lower fees in the but-for world. For example, [redacted] For some developers, this annual fee would mean higher costs. Peekya, [redacted] over the period it offered its app in Google Play (including the one-time $25 developer fee). If Google Play had charged [redacted], Peekya would have paid [redacted] in fees. [redacted] of developers paid less than [redacted] in service fees, so those developers would pay the same amount of fees, or more, if Google Play changed its monetization to [redacted] in the but-for world. Dr. Williams overlooks evidence that [redacted] that depending on the strategy, some developers' fees would be higher in the but-for world.

D. Additional Reasons Consumer Plaintiffs Cannot Show Common Proof of Classwide Antitrust Impact

36. Dr. Singer claims in the alternative that in the but-for world Google might expand its Google Play Points loyalty program, instead of reducing service fees. However, Dr. Singer's Play Points model cannot be used to prove classwide impact. Dr. Singer fails to consider that in the actual world, only about [redacted] of U.S. consumers participated in and have redeemed Play Points. Given that low redemption rates in loyalty programs are not unusual (and are not the result of any alleged conduct), there is no basis to assume that all U.S. consumers would participate in an expanded program and therefore no basis to assume that all consumers would be better off in this version of Plaintiffs' but-for world.

37. Dr. Singer also does not consider that, in a but-for world, [redacted] If [redacted] are passed through to consumers, some consumers who obtained these apps for free in the actual world could pay more overall for apps in the but-for world, even if some of the apps that they paid for in the actual world would be priced lower in the but-for world. The [redacted] could be larger than the decrease in the price of paid apps. Determining whether that would be so would require calculating the price of all free and paid apps for each individual consumer in the but-for world.

38. Consumers who purchase from developers that set low price points likely would not have been impacted by Google's alleged conduct because those developers likely would not have lower cost options to Google Play in the but-for world and therefore will not set lower prices to consumers.

39. Consumers who rely on [redacted] also likely would have been worse off in the but-for world if those forms of payment would not have been as available or available on the same terms as Google Play.

40. Finally, some consumers likely would have been worse off in a but-for world with less robust security warnings if security problems increased or if consumers paid more to avoid security problems.

III. ASSUMPTIONS USED TO CONSIDER DEVELOPER PLAINTIFFS' AND CONSUMER PLAINTIFFS' CLAIMS OF COMMON IMPACT

41. Developer Plaintiffs' expert, Dr. Sibley, and Consumer Plaintiffs' expert, Dr. Singer claim that in certain relevant antitrust markets, Google Play had market power and engaged in certain conduct that foreclosed opportunities to Google Play's competitors, and/or other payment processors. Both experts contend that in the but-for world Google would not have engaged in the alleged conduct and, as a result, there would be increased competition from

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[7] DCB allows consumers to make Google Play payments as part of their mobile phone bill. For example, one of the named Consumer Plaintiffs, [redacted] paid for Google Play transactions through [redacted]. See [redacted]

the entry and expansion of app stores and/or reliance on alternative payment processors that would lead to lower service fee rates for all putative developer class members.[8]

42. For purposes of this report, I assume Dr. Sibley's and Dr. Singer's alleged relevant antitrust markets are properly defined. I have not been asked to analyze those experts' opinions related to relevant antitrust markets and have no economic opinion as to whether their opinions on market definition are consistent with economics or the facts of this case.

43. I further assume, for purposes of my analysis, Dr. Sibley's and Dr. Singer's claim that Google Play had market power in their claimed relevant markets. However, I do not assume or concede that app distribution in the actual world was not competitive, that developers did not have alternatives to Google Play, or that developers did not, or could not, negotiate competitive service fee rates. Indeed, as described below, both Dr. Sibley and Dr. Williams – for Developer Plaintiffs – and Dr. Singer – for Consumer Plaintiffs – agree that certain putative developer class members did negotiate competitive service fee rates.

44. For purposes of this report, I assume Developer Plaintiffs' and Consumer Plaintiffs' claim that in the but-for world, Google Play would face more competition. Notably, Plaintiffs' experts do not specify what form this increased competition would take. Different sources and forms of enhanced competition could have different kinds of effects on Google's approach to the fees and services offered to different developers. Neither Developer Plaintiffs' nor Consumer Plaintiffs' experts have provided any basis to conclude that any increased competition in the but-for world would have been sufficiently strong to result in Google reducing service fees, increasing Play Points, or offering additional tools or features, to any developer or consumer, let alone with respect to all transactions on Google Play. Nevertheless, for purposes of this report, I assume (but do not concede) that increased competition would have resulted in some change by Google in order to analyze whether Plaintiffs' experts have set forth common proof that such a change would have made all or nearly all members of the proposed classes better off.

45. The questions I analyze are whether Developer Plaintiffs have established a method to show that all or nearly all putative developer class members would have been better off in a world where Google did not engage in the challenged conduct and whether Consumer Plaintiffs have established a method to show that all or nearly all proposed consumer class members would have been better off in a world where Google did not engage in the challenged conduct. For the reasons described below, I find that neither Developer Plaintiffs nor Consumer Plaintiffs have established any methodology to show classwide impact for their respective proposed classes.

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[8] Developer Plaintiffs' expert, Dr. Williams, also found that the alleged conduct caused putative developer class members to pay an elevated service fee rates assuming Dr. Sibley's market definitions. Williams Report at ¶¶ 8, 11.

IV. THE PROPOSED CLASSES AND PRODUCTS INVOLVED ARE HIGHLY DIFFERENTIATED

A. APPS AND IAPS

1. Apps are numerous and highly differentiated

46. Software applications ("apps") are available on mobile phones, tablets, PCs, game consoles, and other hardware devices ("devices") that use different operating systems such as Windows OS, Apple iOS, and Android OS.[9]

47. Apps are highly differentiated. Many apps are available on multiple device types and multiple operating systems. For example, the Netflix app is available on devices such as smartphones, tablets, smart TVs, game consoles, set-top boxes, and Blu-ray players, among others.[10] The Netflix app is available for Apple iOS, Android OS, and Windows OS.[11]

48. Apps are created by developers and can be shared with consumers in many ways, including through app stores and direct downloads from the Internet.[12] There are several Android app stores, including Google Play, the Samsung Galaxy Store, the Amazon Appstore, and Aptoide.

49. Apps can be broadly divided into categories. Among apps listed in Google Play, [redacted] are listed by their developers in non-game categories.[13] Education is the largest category, followed by business, tools, music and audio, and entertainment.[14] In Google Play, there are also different categories of game apps.[15]

50. There are numerous apps within each category, and apps in each category may or may not be targeted at the same users. For example, as of May 5, 2021, there were [redacted] different shopping apps in Google Play.[16] Within the category of shopping apps, the FootLocker app

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9 See, for example, "A Beginner's Guide to Mobile Apps," Lifewire, https://www.lifewire.com/what-are-apps-1616114 (explaining that apps are available on various device types, including desktop, mobile, and web); "Five Common Operating Systems," Small Business Chron, https://smallbusiness.chron.com/five-common-operating-systems-28217.html; "Apps for Everyone," Windows, https://www.microsoft.com/en-ca/windows/windows-10-apps (showing that Windows 10 apps are available for various Windows devices including mobile, desktop, and Xbox).

10 See https://devices.netflix.com/.

11 See https://help.netflix.com/en/node/101653.

12 See https://developer.android.com/studio/publish.

13 See Exhibit 1. This figure is based on Android apps in Google Play on May 5, 2021. The figure omits Android apps not registered in Google Play and the breakdown could be different for Apple iOS apps or Microsoft Windows apps.

14 See Exhibit 2.

15 See Exhibit 3.

16 See Exhibit 2.

and the Nike app may be targeted at the same group of consumers, but the Home Depot app may be directed to a different group of consumers.[17]

51. Apps differ along other dimensions, including the characteristics of the consumer's device, e.g., the type of processor or the amount of memory.[18] Some apps depend on having many interacting users and are differentiated by the size of their user community.[19] Many apps are available on multiple platforms or devices while others are not.[20]

52. Apps are offered by a variety of developers. For example, federal and local governments, banks, universities, and service providers such as taxi companies and ride-sharing companies all offer apps.[21]

53. Developers that choose to monetize their apps have several options for doing so. Monetization strategies include, by way of example, requiring a payment to download the app (a "paid app"), selling a subscription that recurs over time to access content in the app (a "subscription app"), selling other non-subscription digital content or features ("in-app products" or "IAPs") within the app (an "IAP app"), and earning revenue through displaying advertisements in the app.[22]

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17 https://play.google.com/store/apps/details?id=com.footlocker.approved; https://play.google.com/store/apps/details?id=com.nike.omega; https://play.google.com/store/apps/details?id=com.thehomedepot.

18 For example, Epic Games describes the minimum device specifications for its Fortnite app as "devices running 64-bit Android on an ARM64 processor, Android OS 8.0 or higher, minimum 4GB of RAM, and GPU: Adreno 530 or higher, Mali-G71 MP20, Mali-G72 MP12, or higher." https://www.epicgames.com/fortnite/en-US/faq.

19 Similarly, certain mobile gaming apps are referred to as Massively Multiplayer Online, in which many users – sometimes thousands – play against or with one another at the same time (e.g., Arcane Legends, published by Spacetime Studios). See "What Is an MMO?" Lifewire, https://www.lifewire.com/what-is-an-mmo-4687003, accessed February 24, 2022; Arcane Legends MMO-Action RPG, Google Play, https://play.google.com/store/apps/details?id=sts.al, accessed February 24, 2022.

20 Epic's Fortnite Battle Royale, for example, is available on PCs at Fortnite.com, on game consoles through PlayStation Store, Xbox Marketplace and Nintendo eShop, and on Android mobile devices through the Samsung Galaxy Store and epicgames.com. "FAQ," Fortnite, https://www.epicgames.com/fortnite/en-US/faq, accessed January 5, 2022. Other games are available only on one platform. See, for example, a list of Nintendo Switch-exclusive games: Kamen, Matt et. al, "Best Switch exclusives to make sure you have in your library," Gamesradar, accessed January 20, 2022, https://www.gamesradar.com/best-switch-exclusives/.

21 See, for example, U.S. federal government apps, https://www.usa.gov/mobile-apps; County of San Diego apps, https://www.sandiegocounty.gov/content/sdc/dmpr/gfx/appcenter/index.html; Bank of America, https://promotions.bankofamerica.com/digitalbanking/mobilebanking; University of Connecticut, https://mobile.uconn.edu/applications/; San Francisco taxi mobile apps, https://www.sfmta.com/taxi-mobile-apps; https://play.google.com/store/apps/details?id=me.lyft.android.

22 "Monetize with ease," Google Play Console, https://play.google.com/console/about/monetize/, accessed March 17, 2022.

54. Free apps – that is, apps that are free to download and include no subscriptions or IAPs – account for about [redacted] of the apps in Google Play as of May 2021.[23] Some developers may be able to reach more users when they distribute apps as free to download, but then monetize such freely distributed apps by converting some of the users into paid users through the sale of IAPs or subscriptions.[24] Other free apps monetize through advertising or through the sale of physical products.

55. Each developer may choose whether to offer its app as a free download with no advertisements (e.g., banking apps, government apps), as a free download with paid advertising (e.g., Facebook), as a paid download (e.g., Minecraft), or as a subscription-based app (e.g., the New York Times app) or as an app with IAPs (e.g., Candy Crush).[25]

56. [redacted][26] Subscriptions and IAPs provide consumers with recurring access to content, extra digital content and features (e.g., premium content, digital goods, digital currency) or the ability to proceed faster through a game.[27]

57. During the class period, August 2016 – December 2021, out of all apps with sales to U.S. consumers on Google Play, [redacted] offer subscriptions or IAPs. Those apps account for [redacted] of all U.S. consumers' spend on Google Play.[28] Similarly among the putative developer class,[29] subscriptions and IAPs account for [redacted] of consumer spend on Google Play during the class

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23 Exhibit 1.

24 [redacted]

25 See BARD Mobile app, https://play.google.com/store/apps/details?id=gov.loc.nls.dtb, accessed March 25, 2022; Bank of America app, https://play.google.com/store/apps/details?id=com.infonow.bofa, accessed March 25, 2022; Facebook app, https://play.google.com/store/apps/details?id=com.facebook.katana, accessed March 21, 2022; Minecraft app, https://play.google.com/store/apps/details?id=com.mojang.minecraftpe, accessed March 9, 2022; New York Times app, https://play.google.com/store/apps/details?id=com.nytimes.android, accessed March 21, 2022; Candy Crush app, https://play.google.com/store/apps/details?id=com.king.candycrushsaga, accessed March 9, 2022.

26 Exhibit 4.

27 See https://developer.amazon.com/docs/in-app-purchasing/iap-overview.html#what-is-in-app-purchasing-iap, accessed March 22, 2022.

28 Exhibit 4.

29 The Developer Plaintiffs define their proposed class as "U.S. developers," without describing how such developers can be identified. The problems associated with the class definition are discussed in Appendix C. For the purposes of this report, "putative developer class members" are identified based on Google's App-level spend data for Developers, GOOG-PLAY-005535885 and GOOG-PLAY-010801689.

period.[30] Examples of subscriptions include access to digital content in apps such as Disney+ or the *New York Times*. Examples of IAPs include digital currency like "VBucks" in the Fortnite game app or "Robux" in the Roblox game app,[31] and points that allow the player to increase the chance of success of winning the game such as "COD Points" in the Call of Duty mobile game app.[32]

58. Developers set prices of apps, subscriptions and IAPs. On Google Play, prices set by developers selling to U.S. consumers varied from [redacted] between August 2016 and July 2021.[33] Developers (and, at times, Google) offer consumers price discounts, which range from [redacted][34] and tend to be of relatively short frequency. During the class period, [redacted] of promotions applied to prices for one month or less.[35]

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30 Exhibit 4.

31 Fortnite's VBucks can be purchased on multiple platforms and can be purchased on one platform, such as Android, and spent on another platform, such as Microsoft's Xbox – a gaming console platform. See https://www.epicgames.com/fortnite/en-US/vbuckscard, accessed March 21, 2022. The Roblox app is a game creation system, or game platform, as well as a social platform. Users purchase Robux and spend Robux to enhance their avatar identities or in-game play. Roblox developers earn Robux through their games, where the exchange rate is 100 Robux for 35 cents. See Roblox Corp. Form 10-Q, September 30, 2021, at pp. 10, 12-13, https://d18rn0p25nwr6d.cloudfront.net/CIK-0001315098/ad69fbb0-a7b7-465b-942f-53206ff42303.pdf (see sections on "Description of Business," "Roblox Platform," and "Principal Agent Considerations"); "Developer Economics," Roblox, https://developer.roblox.com/en-us/articles/developer-economics (explaining to Roblox developers that "Roblox currently uses an exchange rate of ~.0035 USD per Robux earned to calculate the amount of real currency you receive.").

32 Call of Duty is a multiplayer "shooter game," categorized as an "Action" game app in Google Play. IAPs can be used to obtain "COD Points," the game's digital currency, and for "battle passes" that reward the player as they move up through more difficult levels of the game. COD Points are exchanged for weapons and other game features. IAP prices in Call of Duty range from $0.99 to $99.99. See https://play.google.com/store/apps/details?id=com.activision.callofduty.shooter, accessed March 21, 2022 (showing Call of Duty's IAP price range on mobile and "Action" category on Google Play); https://activision.helpshift.com/a/cod-mobile/?p=all&s=cod-points-credits-and-battle-pass&f=what-is-battle-pass&l=en; https://activision.helpshift.com/a/cod-mobile/?p=all&s=cod-points-credits-and-battle-pass&f=what-are-cod-points&l=en.

33 See this report's production, which shows prices in Google's U.S. consumer transaction data; Google Transactions Data, GOOG-PLAY-007203251. See also https://support.google.com/googleplay/android-developer/answer/10532353, accessed January 5, 2022 (stating a price range of $0.99 to $400.00 for the United States); https://support.google.com/googleplay/android-developer/answer/10532353, accessed March 14, 2022 (stating a price range of $0.05 to $400.00 for the United States).

34 Exhibit 5.

35 Exhibit 6. Dr. Singer finds that promotions are small. See, e.g., Singer Table 3 (calculating an [redacted] and Singer Report Appendix 4.

2. Google Play

59. Google Play is a two-sided platform on which developers can offer Android OS apps to consumers, and consumers can find apps offered by those developers that choose to make their apps available on Google Play.[36] Google Play was introduced in 2008 as Android Market and rebranded as Google Play in 2012.[37] As a two-sided transactional platform, Google Play provides benefits to, and facilitates interactions between, consumers and developers.[38]

60. Google Play offers services to developers regardless of whether the developer uses other app stores or platforms, and regardless of whether the developer has apps that generate consumer spend or the amount of consumer spend.[39] For instance, Google Play's discovery services, which help developers find an audience for their apps, are available to all developers, regardless of whether and how they choose to monetize their apps.[40] Developers of free apps and monetized apps also can rely on various other Google tools for developing, testing, marketing, and updating apps.[41]

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36 See https://play.google.com/about/howplayworks/.

37 See https://www.androidauthority.com/android-market-google-play-history-754989/.

38 See https://play.google.com/about/howplayworks/.

39 Requirements to become a Google Play Developer are modest; developers are required to pay a one-time $25 fee, obtain a Google email account, and adhere to the Developer Distribution Agreement ("DDA"). https://play.google.com/about/developer-distribution-agreement.html.

40 In general, developers obtain discovery through app stores, such as Google Play, or by purchasing advertising. Google Play services are especially important to developers that do not have a recognized reputation or brand and that do not have the resources necessary to invest in advertising and marketing themselves to promote their apps. There are several "discovery" features in Google Play including "Top Charts," "Recommended for You," "New Apps We Love," "Recently Updated," "Popular Apps and Games," "Editors' Choice," and "Trending." On a page for an individual app, Google Play highlights "similar" or related apps, as well as other apps published by the same developer. Consumers can pre-register for some apps prior to their launch and receive notification when it is available. (Android, "Pre-registration," available at https://developer.android.com/distribute/best-practices/launch/pre-registration, accessed January 17, 2021. Google Play Instant and the Try Now feature allows consumers to try an app without having to install or pay for it. (Android, "Google Play Store," available at https://developer.android.com/distribute/google-play, accessed January 17, 2021.

41 For example, tools developers use prior to the release of the app to test the app by a small group of trusted users or by a larger group, to reduce the size of the app to save storage space on a consumer device and reduce latency that may lead to lower spend on an app, and to access and incorporate app bundles that contain the elements an app needs to install correctly on mobile devices. See https://play.google.com/console/about/closed-testing/; https://play.google.com/console/about/internal-testing/; https://play.google.com/console/about/opentesting/; https://play.google.com/console/about/app-bundle-explorer/; https://play.google.com/console/about/internalappsharing/. Google offers many other publishing tools and services to developers through Google Play. One of the services provided by Google Play is processing payments if a developer offers a paid app or IAPs in Google Play. See Appendix D for a description of other tools and features provided by Google Play to developers.

61. Consumer Plaintiffs' and Developer Plaintiffs' experts opine that Google Play is a two-sided platform that exhibits indirect network effects.[42] Indirect network effects exist where the value of the two-sided platform to users on each side of the platform increases when the number of users on the other side of the platform grows.[43] For purposes of this report, I assume that Plaintiffs' experts are correct with respect to their opinions about Google Play as a two-sided transaction platform that exhibits indirect network effects. I note that Plaintiffs' experts do not properly account for the dynamics of two-sided platforms that they identify, including positive feedback effects that flow from one side to the other, dynamically in and over time. They do not simultaneously analyze the effect of any response by Google with respect to developers and any response by Google with respect to consumers. Instead, in attempting to analyze the effects of Google's response with respect to one side of Google Play, they hold constant any response from the other side.

62. Google charges for the services Google Play provides through a service fee. Google collects a service fee on each transaction for a paid app download, subscription purchase, or IAP purchase from an app distributed on Google Play. Google Play's service fee is assessed as a percentage of the transaction amount. Google does not collect a service fee from apps that do not offer paid downloads, subscriptions, or IAPs. Google also does not collect a service fee from subscriptions or other purchases made outside of the app, such as through the developer's website, even if the digital content made available by the purchase is consumed within an app distributed through Google Play. In Google Play's App Catalog [redacted] of global developers offered only free apps – that is, apps that require no payment to download and do not include any type of subscriptions or IAPs – as of May 2021.[44] There are no Google Play service fees associated with those developers' apps.

63. During the class period, Google Play service fee rates varied across developers and have changed over time.

64. [redacted]

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42 Singer Report at ¶19; Sibley Report at ¶¶32 – 33; Williams Report at ¶95.

43 Evans, David S., "The Antitrust Economics of Multi-Sided Platform Markets," *Yale Journal of Regulation*, Vol. 20, 2003, pp. 325-381 at 332; Singer Report at ¶19; Sibley Report at ¶114.

44 Exhibit 7.

45 GOOG-PLAY-001291192. Exhibit 8 provides a list of the developers associated [redacted] See GOOG-PLAY-000236162.

46 See GOOG-PLAY-006817773.R.

65. [redacted]

66. [redacted]

67. [redacted]

68. [redacted]

69. [redacted]

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47 See this report's production.

48 GOOG-PLAY-000604733; GOOG-PLAY-003335786.R; GOOG-PLAY-003331764 at -767 [redacted]

49 See Figure 3.

50 GOOG-PLAY-003333689

51 GOOG-PLAY-003333689

52 GOOG-PLAY-001291192; GOOG-PLAY-006998204R at 206.R [redacted] GOOG-PLAY-000236162.

53 See Exhibit 8 for a list of developers that participated in Project Hug.

54 [redacted]

[redacted]

70. [redacted]

71. Google also implemented service fee rate changes at various points in the class period. In 2018, for instance, Google reduced the service fee rate for subscriptions to 15% beyond the first year of a subscription. Effective January 1, 2022, the 15% rate applies to all subscriptions.[61] And in 2021, Google announced that starting on July 1, 2021, for those

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55 [redacted]

56 Glick Dep. at p. 317.

57 https://play.google.com/console/about/partnerprogram/. See also Glick Dep. at pp. 311-315.

58 [redacted]

59 [redacted]

60 GOOG-PLAY-000271389.

61 See e.g., "[Update: Now in effect] Google raises subscription revenue for providers from 70% to 85%, but only for users retained after 12 months," Android Police, January 2, 2018, https://www.androidpolice.com/2018/01/02/google-raises-subscription-revenue-providers-70-85-users-retained-12-months/, accessed November 10, 2021; "Google Play is lowering its developer fees for app subscriptions," XDA Developers, October 21, 2021, https://www.xda-developers.com/google-play-is-lowering-its-developer-fees-for-app-subscriptions/, accessed March 25, 2022.

developers that enroll in Google's program,[62] "the service fee Google Play receives when a developer sells digital goods or services" would change to "15% for the first $1 million (USD) of revenue every developer earns each year."[63] Over [redacted] of putative developer class members earned $1 million or less over the class period; therefore, this change lowered the service fee rate to 15% for nearly all developers including all of the named Developer Plaintiffs, once they enrolled in the program.[64]

B. THE PROPOSED CLASSES

72. In separate matters, two proposed classes – a proposed class of U.S. app developers ("Developer Plaintiffs") and a proposed class of U.S. app consumers ("Consumer Plaintiffs") – allege that certain Google policies and agreements violate federal and state antitrust laws. Both sets of Plaintiffs claim that (1) certain agreements between Google and mobile device original equipment manufacturers ("OEMs"), mobile network operators, and developers, (2) Android's security warnings to consumers and other alleged technical restrictions, and (3) Google's requirement that developers use Google Play Billing for IAPs and subscriptions in apps distributed through Google Play, enabled Google to obtain and maintain monopoly power within and cause competitive harm to alleged relevant markets.[65] Consumer Plaintiffs claim that the alleged conduct caused competitive harm during the class period from August 16, 2016 to the present.[66] Developer Plaintiffs' expert states that the relevant class period for those Plaintiffs is August 17, 2016 to the present.[67]

73. For purposes of my analysis, I assess whether it can be proved, with the same evidence for all members of each proposed class, that all or nearly all proposed class members were impacted by Google's allegedly anticompetitive conduct. I also assess whether individual damages can be determined through common proof.

1. The Proposed Developer Class Definition Includes Over 49,000 Diverse Developers

74. The proposed developer class consists of at least [redacted] U.S. developers. Developer Plaintiffs describe their proposed class as:

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62 https://support.google.com/googleplay/android-developer/answer/10632485, accessed January 5, 2022.

63 "Boosting developer success on Google Play," Android Developers Blog, March 16, 2021, https://android-developers.googleblog.com/2021/03/boosting-dev-success.html.

64 Exhibit 9; see this report's production for the 2021 consumer spend of the named Developer Plaintiffs.

65 Developer Complaint at ¶¶8, 122; Consolidated Second Amended Class Action Complaint, December 3, 2021 ("Consumer Complaint") at ¶¶5-15.

66 Consumer Complaint at ¶213.

67 Sibley Report at fn. 1.

"All U.S. persons or entities that paid Google a 'service fee' of greater than 15% on any paid Android OS app or paid in-app content (including subscriptions) sold in or via the Google Play store, in or via any U.S. or foreign Google Play storefront."[68]

75. Developer Plaintiffs' experts use a different class definition in their analysis: "a class limited to developers that paid Google a service fee at the 30% level on at least one transaction."[69]

76. Developer Plaintiffs have not defined what constitutes a "U.S." developer in their proposed class definition, and their experts fail to investigate or provide an accurate identification of "U.S." developers. For purposes of this report, unless otherwise indicated, I consider developers that are identified in Google's App-level spend data[70] with the country code of "U.S." to be "U.S." developers. The App-level spend data identifies [redacted] hat had at least one consumer transaction for paid downloads, subscriptions, or IAP sales between August 2016 and December 2021.[71] Note that the total number of "U.S." developers (however defined) is far greater, as many developers do not offer paid downloads, IAPs, or subscriptions. I adopt the language in this report "putative developer class members" to refer to the developers identified [redacted] My use of this term is not intended as an affirmative statement as to how one should circumscribe Developer Plaintiffs' class definition. As I discuss in Appendix C, the identification of a "putative developer class member" requires individualized analysis.[72]

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68 Developer Complaint at ¶244.

69 Williams Report at ¶14, Sibley Report at ¶7.

70 The data in GOOG-PLAY-005535885 - GOOG-PLAY-005535886 and GOOG-PLAY-010801688 – GOOG-PLAY-010801689 are referred to as "App-level spend data" throughout this report. These data include monthly information regarding apps that have sales in Google Play, including app revenue, monetization type (e.g., paid download, subscription, or in-app purchase), app category, quantity, service fees, device characteristics, and form of payments.

71 Note that this counts sales to U.S. consumers as well as to consumers in the rest of the world. See Exhibit 10. Dr. Williams assumed that a putative developer class member could be identified based on the data's developer country field; his data processing contains a similar number of developers in the proposed class and their consumer spend during the class period. As described above and in Appendix C, there is no basis for this assumption and the assumption leads to some putative class members that are not U.S. developers by any reasonable definition. See Exhibit 10.

72 Using Google data is likely not an appropriate way to identify "U.S." developers. For example, [redacted]

77. Members of the putative developer class vary widely by the type and number of apps sold, monetization strategies employed, amount of revenues, competitive conditions, availability and use of alternative app distribution channels, options for processing consumer payments, service fees associated with their apps, and other factors. As a group, there were [redacted] paid apps, subscription apps, or apps with IAPs offered by putative developer class members for which there was at least one consumer transaction during the class period.[73] In addition, putative developer class members offered [redacted] free apps (that is, apps that are free to download and contain no IAPs and no subscriptions).[74] In total, putative developer class members offered [redacted] apps in Google Play.[75] [redacted]

[redacted] In some cases, a company and its subsidiary may have different country locations. In addition, there is ambiguity regarding whether developer refers to the creator of the app or a publisher of the app which for some apps are not the same entity. Google data only includes publishers, does not identify whether there is a separate creator, and does not have information on the terms of the relationship between publishers and creators where such relationship exists. See Appendix C for details.

73 Exhibit 11. [redacted] In addition, some of these apps contained advertising and provided benefits to the putative developer class members in the form of advertising revenues. See this report's production.

74 Exhibit 1.

75 Exhibit 1.

76 Exhibit 11.

[redacted]

78. Developers vary widely in terms of the amount of consumer spend they generate. Over the class period, [redacted] of putative developer class members generated [redacted] or less in consumer spend, and [redacted] generated [redacted] or less.[77] The proposed class of developers also includes large developers like [redacted] and [redacted] some of which generate tens or hundreds of millions of dollars in consumer spend on Google Play. In 2021, the top 10 putative developer class parents accounted for [redacted] of all putative developer class members' consumer spend, and the top 30 developer parents accounted for [redacted] of consumer spend.[78]

[77] Exhibit 9.

[78] Exhibit 13.

79. While all putative developer class members, by definition, generate revenue through paid downloads, subscriptions, or IAPs, they do so in different ways. Some members of the putative developer class also generate revenue by including advertisements in their apps.

80. Table 1 below shows the number of putative developer class members that generate revenue through paid downloads, subscriptions, and IAPs. The table shows that over the class period, there were [redacted] developers that offered apps with paid downloads, [redacted] developers that offered apps with IAPs, and [redacted] developers that offered apps with subscriptions. Some developers use more than one type of monetization method. For example, [redacted] developers used both IAPs/subscriptions and paid downloads.

[redacted]

81. There are also [redacted] of the putative developer class, that have at least one app with advertising in addition to an app that generates revenue through paid downloads, subscriptions, or IAPs.[79] Advertising revenues can be substantial for at least some developers. For example, during the period from August 2016 to December 2021, [redacted], an app from [redacted], had [redacted] in consumer spend and [redacted] in AdMob earnings.[80] The app [redacted], by [redacted] generated just [redacted] in consumer spend during the class period but had [redacted] in AdMob earnings.[81] One of the developer class representatives, Peekya, generated [redacted] in consumer spend from paid downloads through Google Play through 2021[82] and [redacted] during the period of time when the

79 See Exhibit 15.

80 See Exhibit 16. Google sells advertising services through Admob. Admob is one of several companies that provide advertising services to app developers and therefore the advertising revenues described above may understate the developer's total advertising revenue. Other companies that provide services related to advertising include Facebook Audience Network (https://www.facebook.com/audiencenetwork/), Unity (https://docs.unity.com/ads/UnityAdsHome.html), MoPub (owned by Twitter) (https://www.mopub.com/en), Leadbolt (https://www.businessofapps.com/ads/leadbolt/), as well as others. Among putative developer class members, 66% use advertising in at least one of their apps, which includes earning advertising revenues that are generated from AdMob. See Exhibit 15.

81 See Exhibit 16. As described above, advertising revenue is available only for AdMob advertising; since there are more advertising service providers besides AdMob, the figures above may understate total advertising revenues.

82 See this report's production.

app was monetized through advertising.[83] There are no Google Play service fees associated with the revenue developers generate through advertising.

82. Some putative developer class members generate revenue through their apps from the sale of goods or services. For example, ride-sharing companies and food delivery apps generate revenues not related to paid downloads or IAPs and therefore, there are no service fees associated with those revenues. Likewise, some putative developer class members also generate revenue from the sale of physical goods. For example, Nike is a proposed class member by virtue of its Nike Training Club app, which sells subscriptions to fitness programs offered through the app.[84] Nike also generates revenue from its sales of clothing and merchandise through its Nike[85] and NIKE SNKRS[86] apps, which do not offer IAPs or subscriptions.

83. Some developers use Google Play to distribute apps but monetize the apps outside of Google Play, bypassing Google Play Billing in part or in whole. For example, consumers can purchase access to content from some developers' websites as well as from Google Play. The *Wall Street Journal* ("WSJ") offers an "All Access Digital" subscription to its content on its website and through its app, which is available for download from Google Play (as well as from other app stores).[87] Bloomberg similarly offers subscriptions both on its website and through an app available from Google Play.[88] Subscriptions to Marvel Unlimited, a comic-book app from Marvel, can be purchased both via Marvel's website – where no service fees are collected – and through the app that is available from Google Play.[89] Other examples of

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83 Response to Interrogatory No. 6, Peekya App Services, Inc.'s Responses and Objections to Defendants' First Set of Interrogatories to App Developer Class Plaintiffs, *In Re Google Play Store Antitrust Litigation*, November 11, 2021, Case No. 3:21-md-02981-JD and Case No. 3:20-cv-05792-JD.

84 https://play.google.com/store/apps/details?id=com.nike.ntc. See this report's production.

85 https://play.google.com/store/apps/details?id=com.nike.omega

86 https://play.google.com/store/apps/details?id=com.nike.snkrs

87 The All Access Digital subscription provides access to WSJ.com and "WSJ mobile and tablet apps." https://store.wsj.com/shop/us/us/wsjuelnsb20/, accessed February 11, 2021. Prices and price offerings on the website versus through the app may be different. For example, on February 11, 2021, the "list" price of a WSJ All Access Digital subscription was different for the two different distribution channels – the list price on the WSJ website was $38.99 per month and the list price through the app was $32.99. In addition, the promotional offers were different across the two channels. Again, on February 11, 2021, the WSJ had three offerings on its website targeting consumers who had different preferences regarding the length of a subscription. It offered a three-month subscription for $4 per month as well as a six-month subscription and a 12-month subscription for $19.50 per month. (In each offer, if the consumer wanted to continue the subscription beyond the offer period, the list price was $38.99 per month.) On the same day, the promotion offered through the app was three months for free. (If the consumer wanted to continue the subscription after the three months, the price would be $32.99 per month.)

88 The website price varied depending on whether the consumer had previous experience (e.g. some "cookie") with the Bloomberg site. If the consumer did not have such experience, the offer was $1.99 for one month.

89 https://play.google.com/store/apps/details?id=com.marvel.unlimited; https://www.marvel.com/unlimited

apps that allow for payment for digital content through the app and on websites include Tinder (a dating app),[90] Evernote (an app for note taking, organizing, and task management),[91] MyFitnessPal (a fitness and dieting app),[92] and HBO Max (a video entertainment app).[93] One of the developer class representatives, Pure Sweat Basketball, offered subscriptions only through its website from 2014 through January 2019, after which it switched to offering subscriptions only through its app.[94] Another class representative, LittleHoots, offers subscriptions through its app and also offers gift subscriptions through its website.[95]

84. Service fee rates for putative developer class members also vary across developers and over time. [redacted]

85. Similar to consumer spend (which was shown in Figure 2), a relatively small number of developers in Google Play account for nearly all service fees. In 2021, for example:

- [redacted]
- [redacted]
- [redacted]

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90 https://tinder.com/en-GB/feature/subscription-tiers; https://www.help.tinder.com/hc/en-us/articles/115003356706-How-do-I-create-a-Tinder-account-

91 https://evernote.com/compare-plans

92 https://www.myfitnesspal.com/premium?source=menu_bar

93 https://www.hbomax.com/ways-to-get

94 See Response to Interrogatory No. 3, Pure Sweat Basketball, Inc.'s Responses and Objections to Defendants' First Set of Interrogatories, *In re Google Play Developer Antitrust Litigation*, Case No. 3:20-cv-05792-JD, November 19, 2021, p.7-9 (showing subscription purchases in the app starting in 2019; Pure Sweat Basketball, https://web.archive.org/web/20170214231549/https://puresweatbasketball.com/training-app/ (showing that Pure Sweat Basketball offered subscription purchases on its website in 2017).

95 See "Shop," LittleHoots, https://www.littlehoots.com/shop/p/ftxisgkwjypb7d6v7zgsxrae8saj8l, accessed January 26, 2022 (showing a purchase option for a "1-year LittleHoots Subscription Gift Certificate"); Play App Catalog, GOOG-PLAY-001507601 [redacted].

96 [redacted] GOOG-PLAY-000236162.

97 Exhibit 17. A list of the developers associated with these programs is attached as Exhibit 8.

98 See this report's production.

- [redacted]

86. Developers (and apps) also vary in terms of the value they obtain from Google Play features and benefits. [redacted] The types of benefits Google provide include transaction processing (including that some types of transactions, such as DCB and gift cards, provided some developers with incremental consumer spend); the benefits of having consumers discover and re-engage with apps, provided through promotions, features, and programs such as Google Play Points; consulting services; as well as other benefits. [redacted]

87. Differences across developers and apps matter to the determination of common impact. The differences in characteristics show that developers have different value to app stores, including Google Play. Developers with popular apps or apps that generate substantial amounts of consumer spend are able to attract consumers to an app store and thus, those developers have relatively more bargaining power to negotiate terms with apps stores. These differences would continue to exist in a but-for world and must be considered in evaluating the effect of an increase in app store competition. The differences suggest that any increase in competition in a but-for world would have the same disparate effect as competition does in the actual world.

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99 Exhibit 18. Exhibit 19 provides data for the class period without considering the changing ownership of developers over those years: over the class period, there are [redacted] See GOOG-PLAY-005535885 and GOOG-PLAY-010801689.

100 GOOG-PLAY-011023692 at 705, 712; GOOG-PLAY-000286913. [redacted]

101 See also GOOG-PLAY-000286913 [redacted]

2. The Proposed Consumer Class Definition Includes Over 90 Million Distinct Consumer IDs

88. The proposed consumer class consists of over 92 million consumer IDs in the U.S. associated with at least one purchase of a paid app, a subscription or IAP in Google Play during the class period.[102]

89. Consumer Plaintiffs describe the proposed Nationwide Class as:

> "All persons in the United States who paid for an app through the Google Play Store, or paid for in-app digital content (including subscriptions and/or ad free versions) on an app that was offered in the Google Play Store from August 16, 2016, to the present."[103]

90. Consumer Plaintiffs describe the proposed Repealer-State Class as

> "All persons in those states whose laws permit indirect purchaser standing and provide for antitrust recovery to indirect purchasers, who paid for an app through the Google Play Store, or paid for in-app digital content (including subscriptions and/or ad free versions) on an app that was offered in the Google Play Store from August 16, 2016, to the present."[104]

91. In this report, unless otherwise described, analyses and statistics related to the proposed class of consumers relate to the proposed nationwide class.

92. Members of the proposed consumer class vary by the type and number of apps for which they made purchases, types of purchases made, amount of money spent on Google Play, and reliance on free apps.

93. Over the class period, there were over 92 million U.S. consumer IDs associated with at least one purchase in Google Play of a paid app, a subscription or an IAP. The purchases involved over [redacted] unique apps.[105] Table 2 shows that through July 3, 2021, [redacted]

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[102] Exhibit 20. The number of consumer IDs is based on Google's transaction-level database. Each consumer ID is identified in the data with a "hashed purchase initiator Google ID." Some consumers have more than one ID. For example, one of the class representatives, Mr. Matt Atkinson has two IDs (see this report's production). Determining which IDs are linked to which consumers requires inspection of detailed information (e.g., name, address, email address). As described below, a consumer is harmed only if the total cost of their purchases is lower in the but-for world compared to the actual world. Therefore, to demonstrate harm for a consumer, it is necessary to identify all the consumer's purchases. However, because some consumers have multiple consumer IDs and there is no simple way to link different IDs held by the same consumer, there is no way to identify the full set of apps downloaded and the total spending on apps, subscriptions, and IAPs for any consumer and no way to consider their total cost of purchases in the actual and but-for worlds to determine impact. In this report, I discuss "consumers" when, in fact, the data represent consumer IDs.

[103] Consumer Complaint at ¶213.

[104] Consumer Complaint at ¶213.

[105] See Exhibit 20. Approximately [redacted] million consumer IDs were excluded from the class definition during the class period if they purchased only free trials or had only refunds. See this report's production.

consumers made purchases of or from only one app and [redacted] of U.S. consumers made purchases of or from three apps or less. On the other side of the spectrum, over [redacted] U.S. consumers have made purchases from more than 100 apps.

94. As I describe below, whether a developer would be subject to a lower service fee and whether that developer would pass on such a lower service fee in the form of a lower price are both individual questions not subject to common proof. For any putative consumer class member that is part of the [redacted]f U.S. consumers that made purchases of or from only one app, if the developer of the app would not be subject to a lower service fee or would not lower the price of the app, subscription, or IAPs in the but-for world, that class member has not been impacted by Google's alleged conduct. But the only way to make that determination is to examine the particular app for that individual.

[redacted]

95. In addition to using apps with paid downloads, subscriptions, or IAPs, members of the proposed consumer class also download apps that are free, including apps that include advertising. The class representatives for Consumer Plaintiffs installed numerous free apps on their devices. For example, [redacted] installed [redacted] free apps across [redacted] devices out of a total [redacted] installed apps, and [redacted] installed [redacted] free apps out of a total of [redacted] installed apps.[106]

96. The amount of consumer spend varies substantially across U.S. consumers. Table 3 below shows that [redacted] of putative consumer class members spent less than $5 during the class

106 Exhibit 22 (The free app counts exclude pre-installed apps by carriers, OEMs, and Google).

period and about [redacted] spent less than $100 during the class period. Only [redacted] of the putative consumer class members spent $1,000 or more. Approximately [redacted] U.S. consumers spent more than $100,000 on Google Play during the class period.

[redacted]

97. In addition, the number of Google Play transactions varied widely across consumers. Approximately [redacted] of putative consumer class members made a single purchase in Google Play during the class period.[107] Notably, these [redacted] of consumers purchased (e.g., a paid download, subscription, or IAP) from more than [redacted] different apps.[108] Again, if that single transaction would not be subject to a lower service fee or would not have a lower price in a but-for world, these consumers are not injured. Determining whether these consumers were injured requires analyzing each individual transaction because these consumers made

107 See Exhibit 24.

108 See Exhibit 24.

only a single transaction. Moreover, determining impact for these consumers implicates over [redacted] different apps.

V. ECONOMIC FRAMEWORK FOR ANALYZING COMMON PROOF OF CLASSWIDE IMPACT

A. ANTITRUST IMPACT RELATIVE TO A BUT-FOR WORLD

98. Antitrust impact refers to a proposed class member's injury-in-fact resulting from the defendant's alleged anticompetitive conduct. Antitrust impact is binary: each class member either was or was not impacted. Antitrust impact is distinct from the determination of damages because it does not purport to measure the degree of harm, but only to establish the existence of harm.

99. To show antitrust impact for a class member, Plaintiffs must establish that the class member is worse off in the "actual world" as compared to a hypothetical world in which the alleged anticompetitive conduct did not take place (i.e., in the "but-for world"). Identifying the differences between the actual world and the but-for world and evaluating how those differences affect a putative class member, are essential to determining whether that putative class member experienced antitrust impact.[109]

B. COMMON PROOF OF CLASSWIDE ANTITRUST IMPACT AND DAMAGES

100. I understand that at the class certification stage, an important question is whether plaintiffs representing a putative class can show, with common evidence that all or nearly all class members experienced antitrust impact. If individualized analysis is needed to determine whether a proposed class member was impacted, or if the proposed class includes members who were not harmed, then establishing classwide impact using common proof is not possible.[110] I also understand that at the class certification stage, an important question is whether plaintiffs representing a putative class can estimate damages with a common method that takes into account the relevant and important factors that may be different across class members.

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[109] See e.g., Johnson, John H. and Gregory K. Leonard, "Rigorous Analysis of Class Certification Comes of Age," *Antitrust Law Journal*, Vol. 77, No. 2, 2011, pp. 569-586; *Reference Manual on Scientific Evidence,* National Academies Press, Third Edition, 2011, pp. 429-430.

[110] To determine damages, the amount of antitrust harm must be quantified. If a proposed consumer class member is found to have paid a price that included an overcharge, then a damage analysis must calculate the difference between actual price and the price that would have been paid in the but-for world. If a proposed developer class member is found to have lost profits, then a damage analysis must calculate the difference between actual profits and the profits that would have been earned in the but-for world. As described below, there are several reasons that determination of impact cannot be proved with common evidence and that certain proposed class members, in both proposed classes, were likely not impacted. For those same reasons, damages to the proposed classes cannot be proved with common evidence and attempts to calculate damages with averages or aggregated amounts would mean that some members of the proposed classes would be compensated even though they suffered no antitrust impact. Given the size of the putative classes, and the number of factors affecting the amount of damages for each class member (if any), the damages calculations in this case would be extraordinarily complex. Plaintiffs' experts have not accounted for that complexity or shown a reliable method of calculating damages for each class member through common proof.

C. PLAINTIFFS' THEORIES OF ANTITRUST IMPACT DEPEND ON PROOF OF SERVICE FEE RATES AND PRICES IN A BUT-FOR WORLD

101. The but-for world is defined by the absence of the alleged conduct: in the but-for world, the alleged conduct does not exist. Below I explain each set of Plaintiffs' theories of antitrust impact and how those theories involve two key issues: (1) whether service fee rates would have been lower in the but-for world, and (2) whether prices of apps, subscriptions, and IAPs would be lower in the but-for world. As explained below, neither set of Plaintiffs have common proof of classwide impact.

102. **Consumers.** Consumer Plaintiffs allege that Google obtained and maintained monopoly power in certain alleged relevant markets and foreclosed competition in those markets. They claim that because of its alleged monopoly power, Google has been able to impose a supra-competitive service fee rate of 30%. Consumer Plaintiffs claim that but-for the alleged conduct, Google would be compelled to lower its service fee rate to all developers, and developers in turn would reduce prices of apps, subscriptions, and IAPs purchased through Google Play.[111] Consumer Plaintiffs' expert, Dr. Singer, claims in the alternative that Google would have responded to increased competition by increasing consumer "subsidies" through its Play Points program.[112]

103. Determining whether any individual consumer was injured as a result of higher prices caused by the challenged conduct requires a highly individualized inquiry into the price of each app, subscription, and IAP in the bundle of apps the consumer downloaded or used, including free apps. If the price of the app, subscription, or IAP would have remained the same in the but-for world, there is no antitrust impact associated with that purchase. Determining whether a price would remain the same or be lower in the but-for world first depends whether the developer of the app would have been subject to a lower service fee, and then depends on whether the developer of the app reduces prices, uses the saved fees to invest in the app (or some other app), or "pockets" the difference. Developers' decisions regarding any saved fees depend on the developer's business strategy and if the developer elects to keep the saved service fees, there is no consumer benefit from the lower service fees in the but-for world. In addition, whether the developer reduces prices depends on app-specific characteristics, including but not limited to the marginal cost of the app, subscription, or IAP, and the demand elasticity of the app. Moreover, even if the price of some apps, subscriptions, or IAPs would have fallen in the but-for world, if the free apps a consumer downloaded would have gone up in price by an amount more than any alleged overcharge on consumer's purchased apps, subscriptions, and IAPs, then there is no antitrust impact – and that could be true for many class members given how many consumers made only a very small number of purchases and spent relatively small amounts of money.

104. Determining whether a consumer would be better off in the but-for world through an expansion of Google Play Points depends, at a minimum, on whether that consumer would have participated in the Play Points program and redeemed any rewards. As described below, even though the Google Play Points program is available to all consumers, many consumers choose not to participate. Even if the program were expanded, there is no

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111 Consumer Complaint at ¶¶4-15; Singer Report at ¶33.

112 Singer Report at ¶33.

evidence that more or all consumers would benefit. Determining which consumers would benefit would require individualized information about consumer's practices and preferences in regard to Google Play Points.

105. **Developers.** Developer Plaintiffs allege that Google improperly obtained and maintained a monopoly in certain alleged relevant markets and foreclosed competition in those markets. Developer Plaintiffs claim that through the exercise of its alleged monopoly power, Google was able to impose a supracompetitive default 30% transaction fee, and required that apps, in-app purchases, and subscriptions be priced no lower than $0.99. They claim that absent the alleged conduct, Google Play's service fee rates would be lower for all developers, at least some developers would reduce their retail prices, and developers' sales would have been higher.[113]

106. Dr. Williams, one of Developer Plaintiffs' experts, claims that in the but-for world, service fees would have been lower than in the actual world and the difference is the amount the developers were overcharged.[114]

107. Both sets of Plaintiffs assert antitrust impact and seek damages based on the *same* difference in the actual and but-for service fees; that is, the two distinct groups claim the same "overcharge" as the measure of their harm.[115] For reasons that I explain below, even if it is theoretically possible that both developer and consumer class members could each claim some non-overlapping portion of the alleged overcharge for each app, determining what portion of each service fee overcharge should be allocated to which developer and which consumer would be highly complex and would require individualized analysis of each app.

108. Dr. Williams, one of Developer Plaintiffs' experts, also discusses lost profit damages. Overcharge damages are different from lost profit damages.[116] Overcharge damages consider only the difference between service fees in the actual and but-for worlds. Lost profits damages consider the additional effects of a price reduction on a developer's sales and can include changes in the developer's costs in the but-for world. To the extent Developer

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113 Developer Complaint at ¶8, ¶14, ¶28, ¶179; Sibley ¶36, ¶¶259-261, ¶¶270-273. Developer Plaintiffs' experts do not address the allegation that Google Play's minimum price of $0.99 was anticompetitive or the extent to which retail prices would be lower absent Google Play's minimum price and any effects from those lower prices on putative developer class members. In addition, the Developer Plaintiffs' expert finds that "over 92% of product-monetization-type combinations have zero or negative pass-through rates." See Williams Report at ¶80.

114 Williams Report ¶9.

115 Some Consumer Plaintiffs purchased apps, IAPs, and subscriptions from the putative class of developers. Dr. Williams estimates that, for the period August 2016 to December 2020, damages to the putative developer class from sales to U.S. consumers range from [redacted], depending on the benchmark used (and including his estimated deduction for consumer "rewards"). Dr. Singer, the expert for Consumer Plaintiffs, estimates for that same period, damages to U.S. consumers from apps purchased from the putative developer class ranges [redacted] depending on whether IAPs are considered together or separate from paid downloads. These estimated damage amounts reflect the same alleged harm and are thus duplicative claims. See this report's production.

116 Williams Report at ¶72 and Appendix III.

Plaintiffs are limited to lost profits damages, their experts have not proposed a methodology, common or otherwise, to calculate lost profits damages.

109. A lost profits analysis is even more individualized than an overcharge analysis because developers' profits can depend on their prices and their distribution costs. Thus, calculating whether a developer lost profits depends not only on the proof that a developer would have paid a lower service fee rate in a but-for world, but also on proof of a developers' prices and distribution costs in a but-for world.

110. If developers would respond to service fee reductions by reducing prices to consumers, then developers would not suffer antitrust impact unless those price reductions generate sufficient incremental sales volumes to be profitable. The amount of incremental sales volume due to a price reduction depends on that app's price elasticity of demand, which in turn depends on the availability and relative closeness of substitutes for the app. In addition, the amount of incremental sales volume depends on whether the prices of those substitute apps also fall in response to a service fee rate reduction. Similarly, whether a developer experiences higher distribution costs in the but-for world depends on characteristics of its app. As explained below, the extent to which reductions in the service fee rate for each developer are offset by changes in revenue or changes in distribution costs is highly individualized and requires information about the particular app, the competition for that app, the cost of the app to the developer (including distribution costs, which may be higher in the but-for world if the developer uses additional app stores[117]), and other factors that are particular to the app and the developer.

111. Developer Plaintiffs' determination of antitrust impact is further complicated by the need to account for the effects on free apps in a but-for world. Free apps make up a significant share of the apps available in Google Play and are present in substantial amounts in all app categories.[118] Price elasticity of demand for paid apps, subscription apps, and apps with IAPs depends on substitutability of these apps with free apps. Moreover, a significant percentage of the putative developer class offers free apps. To the extent that Google Play (or other app stores) in the but-for world would choose to charge fees for those apps those developers could be worse off. These effects too must be considered in analyzing whether a putative developer class member that also has free apps would earn higher profits in the but-for world.

VI. NEITHER SET OF PLAINTIFFS CAN ESTABLISH CLASSWIDE ANTITRUST IMPACT WITH COMMON PROOF

A. NO COMMON PROOF OF UNIFORM LOWER SERVICE FEES IN THE BUT-FOR WORLD

112. Both sets of Plaintiffs claim that in the but-for world, Google Play's service fees rates would have been lower than in the actual world. However, Plaintiffs cannot assume that every member of the proposed classes would have been subject to a lower service fee rate.

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117 App developers with lower service fees in the but-for world could choose to reduce app prices, to invest in apps, or to "pocket" the difference in service fees. Whether a developer reduces app prices or uses any lower service fees to invest in its apps depends on the developer's business strategy. If a developer decides to "pocket" the difference in service fees, there is no consumer benefit from the lower service fees in the but-for world. That too, is an individualized decision on the part of the developer.

118 Exhibit 2 and Exhibit 3.

More than a de minimis number of proposed class members would not have a lower service fee and thus would not be injured at all; and determining which members would obtain lower service fees requires individualized analysis.

1. No Basis for Assuming a Uniform But-For Service Fee or a Uniform Service Fee Reduction

113. The fact that Google Play's service fee rate structure and rates vary across developers and over time in the actual world belies Developer Plaintiffs' and Consumer Plaintiffs' assertion that service fee rates or service fee rate reductions would be common and uniform in the but-for world.[119] Because apps vary in terms of their importance to app stores and vice versa – which has allowed certain app developers to obtain specific deals, programs, and services – individualized analysis is necessary to determine the service fee rates that would apply to each app in a but-for world.

114. Google provides certain developers with lower service fee rates and expanded services through special programs [redacted] Evidence indicates that these lower rates and expanded services reflect an effort to compete against alternatives for developers to distribute or monetize their apps.[120]

115. Even taking Plaintiffs' market definitions as given, these alternative distribution channels for Android apps include (at least) the Samsung Galaxy Store,[121] the Amazon Appstore,[122]

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[119] Dr. Williams claims that all putative developer class members would have the same service fee rate in the but-for world. See Williams Report at ¶¶44, 50. Dr. Singer claims that there could be two but-for service fee rates – one for paid apps and another rate for subscriptions and IAPs; or there could be a single but-for rate for all developers and transactions. Dr. Singer allows a category's but-for service rate to deviate from the overall but-for rate by the same proportion in which the category's actual rate deviates from the average actual rate. See Singer Report at Table 3, Table 5, Appendix 4 and ¶280.

[120] See e.g., https://developer.apple.com/programs/video-partner/ (Apple's 2016 Video Partner Program offering certain premium video entertainment developers a service fee rate of 15%); Amazon Developer Services Agreement, last updated September 25, 2018, https://web.archive.org/web/20181026122837/https://developer.amazon.com/support/legal/da (Amazon's 2018 policy providing developers a revenue share of 80% for Movies & TV subscription IAPs). Both Consumer Plaintiffs' and Developer Plaintiffs' experts contend that these rate reductions reflect competitive conditions. See Sibley Report at ¶¶102, 205; Williams Report at ¶54.

[121] The Samsung Galaxy Store comes pre-installed on all Samsung mobile devices. [redacted] See GOOG-PLAY-000097630 at 630-632.

[122] https://www.amazon.com/gp/help/customer/display.html?nodeId=GP96AU3MQ58FMV8U In addition to being a developer with its popular (free) e-commerce app and offering an app store, Amazon has other businesses relevant to app distribution and the servicing of developers including its game engine – Lumberyard, cloud computing services (AWS), and the physical distribution of app gift cards and game developers' physical disks. See https://docs.aws.amazon.com/lumberyard/latest/userguide/lumberyard-intro.html.

Aptoide,[123] Opera Mobile Store,[124] and a variety of app stores available to developers that sell to consumers outside of the U.S. such as ONE store[125] and UptoDown,[126]

116. Developers may also distribute apps directly on their websites – a process sometimes called "side-loading." For example, Epic Games distributes Fortnite, a popular gaming app, on its website.[127]

117. [redacted] As shown in Exhibit 17, there are [redacted] These developers accounted for [redacted] The global developers that participate in these programs accounted for [redacted]

118. [redacted]

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123 See https://en.aptoide.com/company/about-us (stating that Aptoide has 300 million users worldwide, 7 billion downloads, and 1 million apps).

124 https://publishers.apps.bemobi.com//Opera-Microsoft-FAQ.html; https://www.wikiwand.com/en/Opera_Mobile_Store.

125 See ONE store Introduction, 2020.02, at slide 4, https://dev.onestore.co.kr/devpoc/static-res/files/ONEstoreIntro_dev_en.pdf, accessed July 7, 2021. ("ONE Store is embedded into almost all Android devices in Korean market, regardless of carrier. As a result, the number of devices with ONE store installed is over 50 million.").

126 See "What is Uptodown?" Uptodown, https://www.uptodown.io/what-s-uptodown, accessed November 17, 2021 (stating that Uptodown is headquartered in Spain and has "content localization based in different locations like Indonesia, India, United States, Italy, Japan, South Korea, Germany, France, Thailand, China or Russia.").

127 https://www.epicgames.com/fortnite/en-US/mobile/android/get-started See also https://www.androidauthority.com/best-sideloaded-apps-android-1155580/ for apps that are not available on Google Play but available through "side-loading." Certain app developers can and do distribute apps through PC platforms (e.g., Steam, Epic Games Store, Windows Store) or game console platforms (e.g., Microsoft Store, Nintendo eShop, and PlayStation Store). Some large game developers use their own platforms to distribute their games for PCs. For example, Electronic Arts has Origin, (https://www.origin.com/usa/en-us/store), Ubisoft has Uplay (https://ubisoftconnect.com/en-US/), Activision Blizzard has Battle.net (https://us.shop.battle.net/en-us) , and Bethesda has the Bethesda Launcher (https://bethesda.net/en/store/home). Game developers can also distribute apps through Facebook Instant Games, or through Crazy Games – a browser-based game platform (https://about.crazygames.com/).

128 See e.g., GOOG-PLAY-000542244.

129 Exhibit 17.

130 Exhibit 17.

[redacted]

119. The fact that other app stores provide lower service fee rates and/or more benefits to certain targeted developers provides additional evidence that Google's competitive strategy would not change in a but-for world. [redacted] velopers of 20 of the top 100 games in Japan – lower service rates and other incentives.[132]

120. [redacted] For example, Samsung entered into an arrangement with Epic for distribution of Fortnite. [redacted] Samsung has utilized a tiered service fee rate structure over some of the class period. While its standard service fee rate was 30%, for "premier partners" the service fee rate was 20%.[134]

121. App stores' targeted use of incentives in the actual world reflects that different apps have different value to app stores. Currently, in the actual world, developers that have particularly attractive apps to app stores can receive special incentives. There is no reason to assume that in the but-for world, these differences across developers would not continue to exist. Just as service fee rates in the actual world are not uniform, the same is likely to continue to be the case in the but-for world: service fee rate reductions are not likely to be uniform.

122. The likelihood that not all apps or developers would experience service fee rate reductions in the but-for world is further borne out by the fact that rate reductions have not been uniform across apps or developers in the actual world. Google Play has reduced its

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131 See e.g., GOOG-PLAY-000542244 at 244. See also "Evolving our business model to address developer needs," Android Developers Blog, October 21, 2021, https://android-developers.googleblog.com/2021/10/evolving-business-model.html ("The creativity and innovation from developers around the world spurred amazing new app experiences we could have never imagined when we first introduced Android. As the ecosystem evolved, a wider range of business models emerged to support these different types of apps. We've made important changes along the way, including moving beyond a "one size fits all" service fee model to ensure all types of businesses can be successful. Instead of a single service fee, we now have multiple programs designed to support and encourage our diverse app ecosystem.")

132 GOOG-PLAY-000568027 at 028.

133 See [redacted]

134 See Samsung Galaxy terms and conditions 2014, https://seller.samsungapps.com/notice/getNoticeDetail.as?csNoticeID=0000002677; Samsung Galaxy terms and conditions, 2019, https://seller.samsungapps.com/notice/getNoticeDetail.as?csNoticeID=0000004278; GOOG-PLAY-000561051.R at 019.R; [redacted]

service fee rates for particular types of apps, particular developers, and particular kinds of developers.

123. [redacted]

124. [redacted]

125. In 2018, Google reduced the service fee rate for subscription IAPs to 15% after a consumer subscribes for one year, but this reduction did not apply to pay-to-download apps or to non-subscription IAPs.[137] [redacted]

135 See GOOG-PLAY-000604733 at 738; GOOG-PLAY-001291192 at -208. Exhibit 8 provides a list of the developers associated with five of these programs.

136 See GOOG-PLAY-000604733 at 738. Exhibit 8 provides a list of the developers associated with five of these programs.

137 "Google Play Lowers App Subscription Fee to 15 Percent, Matches Apple's Offering," Gadgets 360, October 20, 2017, https://gadgets.ndtv.com/apps/news/google-play-app-subscription-fee-30-percent-to-15-1764923, accessed November 8, 2021. Google's subscription fee rate reduction followed Apple's 2016 rate reduction on subscriptions. See Fingas, Roger, "Apple announces it will offer App Store subscriptions to all apps, take smaller 15% cut," Apple Insider, June 8, 2016, https://appleinsider.com/articles/16/06/08/apple-announces-it-will-offer-app-store-subscriptions-take-smaller-15-cut, accessed November 8, 2021.

[redacted]

126. [redacted]

127. Figure 4 shows the distribution of service fee rates for the [redacted] putative developer class members that had paid download, subscription, or IAP sales in Google Play and an average annual service fee rate greater than zero percent in every year from 2017 through 2021. Figure 4 shows that when Google reduced service fee rates, it did so for only certain developers.[139]

138 GOOG-PLAY-001291192; GOOG-PLAY-006998204R at 206.R (2021 deck showing that Hug apps accounted for [redacted] of Play spend); GOOG-PLAY-000236162.

139 See Exhibit 26 showing the percentages for all putative class developers with an average annual service fee rate greater than zero percent in any year between 2017 and 2021 in which they had sales in Google Play.

128. When other app stores reduced service fee rates, those reductions were generally limited to a targeted set of developers or apps as well. Exhibit 28 provides a summary of app stores' rate reductions and shows that in nearly all instances, when an app store has reduced service fee rates, it did so for a certain set of developers or apps, not all developers and apps.

129. There are two instances in which an app store reduced service fee rates for all apps; however, both of those cases contradict Plaintiffs' claims about the but-for world. In July 2018, ONE store, an Android app store in South Korea, reduced its 30% service fee rate to 20% for all developers and to 5% for any developer that used the developer's own payment processing system.[140] Although Dr. Singer claims that ONE store was able to "overcome the prohibitive restrictions on competition imposed by Google," and obtain 14.9% of payment volume, ONE store's rate reduction did not lead Google Play or other app stores to reduce

[140] ONE store Introduction, ONE store Corp. January 2020 at p. 9, https://dev.onestore.co.kr/devpoc/static-res/files/ONEstoreIntro_dev_en.pdf, accessed November 8, 2021. ONE store entered the app distribution business in Korea in June 2016, when three app stores, operated by three telecom companies in Korea – SK Telecom, KT and LG – integrated their stores and rebranded as ONE store. In 2020, ONE store described itself as an "Android-based distribution platform which provides mobile apps, games, eBook content, and physical goods." Since 2016, it has been pre-installed on almost all Android phones in Korea. ONE store Introduction, ONE store Corp. January 2020 at pp. 3-5, 9, https://dev.onestore.co.kr/devpoc/static-res/files/ONEstoreIntro_dev_en.pdf, accessed November 8, 2021.

service fees across the board (even in South Korea).[141] This undermines Plaintiffs' experts' assumption that more successful alternative app stores would result in across-the-board reductions in service fees. Further, in 2018, the Epic Game Store entered app distribution for PC Games with a service fee rate of 12%. The Epic Game Store's service fee rate was and continues to be lower than the rates of many other app stores.[142] The entry of the Epic Game Store did not lead to reduced service fee rates for all developers, or all game developers, or even all developers of PC games.[143] In the limited instances where an app store has offered lower rates to all developers, other app stores, including Google Play, did not respond in kind to the lower rates.[144]

2. Not All Developers Would Pay Less If Developers Could Separately Contract with Payment Processors

130. Plaintiffs' claim that all developers would pay less because, in the but-for world, some developers would opt out of Google Play Billing ("GPB") and independently contract with alternative payment processing services does not consider that these payment processing alternatives likely would have been more costly to many developers.

131. According to Plaintiffs, in the but-for world, other payment processors would provide viable billing alternatives to GPB.[145] However, for developers that rely primarily on low-

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[141] Singer Report at ¶¶196, 198. In 2020, according to ONE store, its catalog consisted of 20,000 game titles and 200,000 apps. Moreover, very few developers elected to use their own payment processing systems; according to ONE store, in 2020 – over one year after ONE store reduced its rates – only 30 titles used developer owned payment processing. ONE store Introduction, ONE store Corp. January 2020 at pp. 3, 9, https://dev.onestore.co.kr/devpoc/static-res/files/ONEstoreIntro_dev_en.pdf, accessed November 8, 2021. [redacted] GOOG-PLAY-000953420R – 22,38,40, 60; GOOG-PLAY 000365029; GOOG-PLAY-000005203- 08; GOOG-PLAY-003332070-081.

[142] https://www.epicgames.com/store/en-US/news/the-epic-games-store-is-now-live

[143] Steam, another PC game store, reduced its rates a month prior to the entry of the Epic Game Store. https://www.theverge.com/2018/11/30/18120577/valve-steam-game-marketplace-revenue-split-new-rules-competition.. Even if Steam's rate reductions were in anticipation of Epic Game Store's entry, rates to all Steam developers were not reduced. In fact, Steam reduced rates only to relatively large developers but maintained its 30% rate for developers that generated less than $10 million in consumer spend. Moreover, the Epic Game Store has not been particularly successful. See e.g., https://www.polygon.com/2019/4/5/18295833/epic-games-store-controversy-explained ("Some PC gaming fans are grousing at having to navigate a new store and install new software if they want to play certain games. Some blanch at Epic's comparatively thin store software and how the company is using its *Fortnite* windfall to lock up store-exclusive games. Others have convinced themselves that Epic, its CEO Tim Sweeney, and its Chinese investor Tencent are up to something sinister. Epic itself admits that the storefront launched in a half-baked state."). See Exhibit 28.

[144] According to Dr. Singer, ONE store has "overcome the prohibitive restrictions to competition imposed by Google." See Singer Report at ¶198.

[145] Consumers identify PayPal, Stripe, and Intuit. Developers identify PayPal, Stripe, Square, and Braintree. See Consumer Complaint at ¶10; Developer Complaint at ¶¶206, 236.

priced app transactions, these alternatives could be more expensive, not less expensive. Table 4 shows that various payment processors' rates include not only a fee based on the percentage of the value of the transaction, but also a fixed charge for each transaction. For example, PayPal, Braintree, Square, and Stripe include a percentage fee plus a fixed charge of $0.15 to $0.49.

Table 4. Fees for Payment Processing Service Providers, 2021

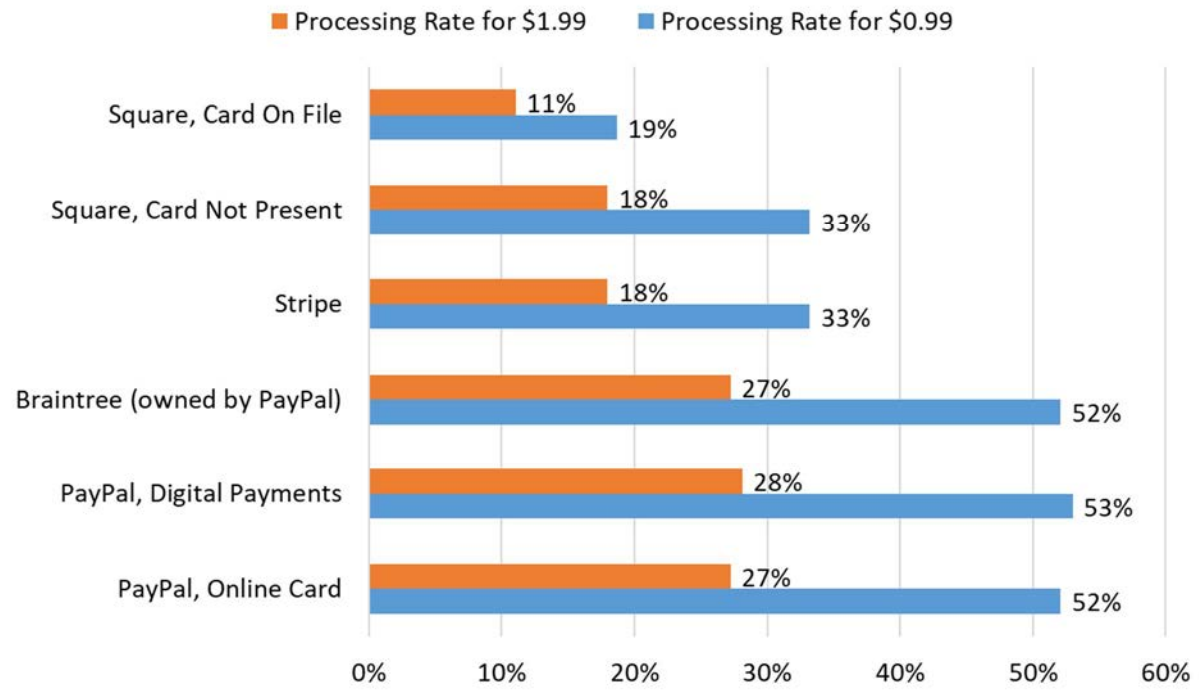
Payment Processing Service Provider	Base Rate (U.S.)
PayPal	2.59% + $0.49 [online card] 3.49% + $0.49 [digital payments]
Braintree (owned by PayPal)	2.59% + $0.49
Stripe	2.9% + $0.30
Square	2.9% + $0.30 [card not present] 3.5% + $0.15 [card on file]

Source:

Exhibit 29.

132. Payment processors' cost to developers can be substantially higher than 30% of the value of the transaction for developers with low prices. For example, a developer with a $0.99 price that used PayPal would pay $0.49 plus 2.59% of the price. The total cost is $0.52 or 52% of the value of the transaction – substantially higher than Google Play's 30% (or 15%) rate. Similarly, a developer with a $1.99 price would pay $0.49 plus 2.59% of $1.99. The total cost is $0.54 or 27%. Figure 5 illustrates that the effective rate of many payment processors for low price points either exceeds or is close to Google Play's 30% (or 15%) rate. Individualized inquiry is required to determine which payment processor a developer would have selected in a but-for world based on its transaction mix and thus to determine costs in a but-for world for each developer.

Figure 5. Effective Payment Processing Rates of Alternative Processors at Low Price Points



Source:

Exhibit 30.

133. Moreover, a developer that opted out of GPB would additionally have to incur costs for the other services that Google provides, such as customer service, subscription management, and management of billing disputes. The developer would incur the costs associated with integrating those features into any alternative payment processing system, possibly leading to further increases in the developer's costs and reducing its profits. Plaintiffs' experts have not accounted for these costs, which are specific to each app. For $1.99 apps, adding these costs to payment processing costs, could make the developer worse off in a but-for world.

134. A substantial percentage of putative developer class members set prices at $0.99 and $1.99. Figure 6 shows that [redacted] only sell apps, subscriptions, or IAPs at $0.99, and [redacted] of putative developer class members sell at $1.99 or lower.

135. Other payment processors likely would not be an economically viable option for developers that sell at (or mostly at) low price points. In the but-for world, those developers likely would not have obtained lower service fee rates by independently contracting with a payment processor, so there would have been no economic reason for Google to reduce its service fee for these developers based on developers' ability to process payments through another processor.[146] Given that those developers did not obtain a lower rate in the but-for world, they would not be impacted and have suffered no injury. In addition, developers that did not pay lower fees would not lower prices, so consumers who purchased from these developers would not be impacted and have suffered no injury. As shown in Figure 6, these potentially uninjured developers constitute between [redacted] and [redacted] of the proposed developer class.

136. In addition, because those developers would not have a lower service fee, there is no alleged overcharge to "pass through" to consumers – meaning that members of the proposed consumer class who purchased apps, subscriptions, or IAPs at low price points could not have been impacted, either.

137. Because some developers that sell apps, subscriptions, and IAPs at $0.99 or $1.99 also sell other apps, subscriptions, and IAPs at higher prices, determining whether a developer's service fees would have been lower with alternative payment processors requires analyzing

[146] Other alternative payment processors could have higher fees than Google Play. [redacted]

the relative volumes of sales at the lower price points and the higher price points. For example, in the actual world, a developer that sold 800 IAPs at $0.99 and 200 IAPs at $3.99 would have higher payment processing costs if PayPal processed the developer's payments as compared to Google Play. The developer's payment processing costs would have been the total of its costs of processing the 800 transactions at the $0.99 price and the costs of processing the 200 transactions at the $3.99 price ($531.18) divided the developer's revenue from all of transactions ($1590) – or 33%.[147] Therefore, for developers that sell apps, subscriptions, or IAPs at price points both below and above $1.99, determining antitrust impact would require an individualized analysis for each developer to determine if the developer would have been better or worse off in a but-for world.

B. No Common Proof of Lower Prices for Apps, Subscriptions, and IAPs in the But-For World

138. Whether any individual consumer or developer experienced antitrust impact depends on the prices of apps, subscriptions, and/or IAPs in the but-for world.

139. For consumers, a service fee rate reduction must lead to price reductions to them, otherwise there is no antitrust impact. But even if all service fee rates were lower in the but-for world, it is not the case that all app, subscription, and IAP prices would have been lower. Differences in cost conditions for different apps, differences in the demand elasticities for different apps, and differences in app developers' pricing strategies indicate that many developers would not charge lower retail prices for apps, subscriptions, and IAPs in a but-for world with uniformly lower service fees.

140. If a service fee rate reduction led to lower prices, one must assess the consequences of that lower price for the developer's profits to determine whether the developer experienced an antitrust impact. A developer could reduce its prices in response to a service fee rate reduction or in response to a price reduction by a substitute app. In either case, to determine impact, the effects of the lower retail prices on the developer's profits must be considered.

141. A developer's decision to reduce retail prices when the service fee rate is lower depends on at least three factors: (i) the marginal costs of distributing the developer's apps, (ii) the developer's pricing strategy, and (iii) the developer's price elasticity of demand. Because these factors vary by developer and by app, determining whether a retail price is lower in the but-for world necessarily requires individualized inquiry.[148]

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147 PayPal's payment processing costs under this scenario would be about 33% of the developer's gross revenue. See Table 4 for PayPal's costs. Applying PayPal's base rate for online credit and debit card transactions, the developer's gross revenue is $1590.00 (= 800 * $0.99 + 200 * $3.99). The payment processing costs are $531.18 = (2.59%*$0.99 + $0.49) * 800 + (2.59% * $3.99 + $0.49) * 200, which is about 33% of gross revenues.

148 See Deposition of Adam Sussman, January 7, 2022, ("Sussman Dep.") at pp. 263-265 [redacted]

1. Developers' Marginal Costs

142. Developers vary in terms of whether their apps have a positive marginal cost or marginal cost close to zero. This is relevant to a determination of impact because the type of economic models that for example, Dr. Singer relies on show that a service fee rate change depends in part on whether the developer's apps have a positive marginal cost or marginal cost close to zero.[149] The models show that if an app has zero (or close to zero) marginal cost, a reduction in the service fee rate will be less likely to lead to a change in the retail price of the app. In economic models of profit-maximization, a developer considers marginal cost and marginal revenue to determine the optimal price and quantity. If marginal cost is zero, profit maximization is equivalent to revenue maximization because costs do not play a role. That is, the profit-maximizing price of the app is also the revenue-maximizing price of the app. Under these conditions, the price that maximizes 70% of revenue will also maximize 85% of revenue (or any percent of revenue).[150] This also applies with regard to subscription prices or IAP prices.

143. For some apps, subscriptions, and IAPs, marginal costs are likely to be zero or close to zero.[151] The cost of producing (e.g., creating) and distributing are incurred for a single consumer to download or purchase, but do not change as more consumers download or purchase it. Thus, the marginal cost of the app, subscription, or IAP is zero. Therefore, a change in the service fee would likely have little or no effect on the price charged to consumers.

144. However, some apps have positive marginal costs. Apps that provide licensed content to consumers may incur incremental costs as more consumers access the content. Music

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149 Singer Report at ¶225.

150 See e.g., Liobet, Gerard and Jorge Padilla, "The Optimal Scope of the Royalty Base in Patent Licensing," *Journal of Law & Economics*, Vol. 59, No. 1, 2016, pp. 45-73 at 53 ("The case in which $c = 0$ is particularly illuminating of the different effects at work…Under ad valorem royalties, however, there is no conflict between the innovator and the producer, since both firms are interested in maximizing total revenue. Hence, no matter how large s is, the downstream producer always chooses the monopoly price. In other words, there is no pass-through of a higher ad valorem royalty into a higher price."); Kobayashi, Bruce H. and Joshua D. Wright, "What's Next in Apple Inc. v. Pepper? The Indirect-Purchaser Rule and the Economics of Pass-Through," *Cato Supreme Court Review*, 2018, pp. 249-269 at 262 ("To the extent that the marginal costs of producing and distributing another copy of the app is zero, the theoretical calculation of the markup is far from complex—it is simple. And the effect of the Apple 30 percent ad valorem royalty on the optimal price set by the app developer is zero.").

151 Marginal costs of digitally distributed products are sometimes assumed to be zero in the economic literature. See e.g., Weber, Thomas A., "Delayed Multi-Attribute Product Differentiation," *Decision Support Systems*, Vol. 44, 2008, pp. 447-468 at pp. 447, 451 ("Information goods such as computer software or electronic newspapers can be provided by firms at a low marginal cost, though in many cases large capital outlays are required to produce their first unit…. Throughout most of this paper we consider information goods with zero marginal cost, which simplifies the closed-form solutions. … For information goods, the costs of reproduction and distribution are indeed very small, so that this has become a standard assumption in much of the extant literature."); Lambrecht, Anja, et al., "How do firms make money selling digital goods online?" *Marketing Letters*, Vol. 25, No. 3, 2014, pp. 331-341 at 331 ("Such [digital] goods are non-rival, have near zero marginal cost of production and distribution, low marginal cost of consumer search and low transaction costs.").

streaming developers, such as Spotify, may incur the marginal cost associated with licensing fees paid to record labels and music publishers. According to Spotify, it was forced to raise its prices in response to Apple's service fee rates and when it did so, its relative price increased – compared to Apple's price, and the demand for its app service fell.[152] Other types of apps that rely on licensed content and pay licensing fees that depend on the usage of the app would also have positive marginal costs. For example, some games incorporate music and the developers of those games may pay music licensing fees each time a consumer downloads the app and listens to the music.[153]

145. Another example is weather apps that may have positive marginal costs because as more consumers in new locations demand weather-related information, the cost of obtaining the information increases.[154] Some apps may rely on licensed intellectual property and licenses may be based on a per consumer or per transactions basis. Determining which apps have positive marginal cost and which have marginal cost close to zero would require information about the content and the structure of the licensing fees paid by the developers.[155]

146. Other developers may have different types of positive marginal costs.[156] For example, apps that require processing of consumer information (e.g., usernames and communications across consumers) such as multi-player game apps and apps that require relatively high costs for customer support[157] may have positive marginal costs. As the number of app users increases, the processing costs associated with the app increases.

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[152] Testimony of Horacio Gutierrez Head of Global Affairs & Chief Legal Officer, Spotify U.S. Senate Judiciary Committee Subcommittee on Competition Policy, Antitrust, and Consumer Rights April 21, 2021 at fn. 13 ("Spotify could not absorb the IAP tax without raising its prices, because a large component of its costs are the licensing fees paid to record labels and music publishers."); *id.* at p. 8. ("Spotify recognized that it could not compete with Apple's lower price and in May 2016 eliminated IAP, which required it to forgo any in-app purchases of Premium and any in-app upgrades from Free to Premium."). See also European Commission Press Release, Antitrust: Commission sends Statement of Objections to Apple on App Store rules for music streaming providers, Brussels, 30 April 2021 ("Apple charges app developers a 30% commission fee on all subscriptions bought through the mandatory IAP. The Commission's investigation showed that most streaming providers passed this fee on to end users by raising prices.").

[153] Choices: The Stories You Play is a top revenue-generating app offered by Pixelberry Studios that incorporates music with its stories. See https://play.google.com/store/apps/details?id=com.pixelberrystudios.choices.

[154] See e.g., https://developer.accuweather.com/packages (showing package pricing for Accuweather APIs).

[155] See, for example, [redacted]. See also Zynga Inc. Form 10-K, 2020 at p. 2 and Electronic Arts Form 10-K, 2020 at pp. 3, 5.

[156] See Ghose, Anindya, and Sang Pil Han, "Estimating Demand for Mobile Applications in the New Economy," *Management Science*, Vol. 60, No. 6, 2014, pp. 1470-1488 at 1481 ("Ongoing marginal costs for app developers arise from various maintenance-related tasks after app development.").

[157] See https://slack.com/help/requests/new

147. Identifying which apps' marginal costs are positive (and not close to zero) requires information about each app; one cannot assume that all apps have zero marginal cost or that all apps have positive marginal cost. Moreover, identifying the marginal costs associated with an app is not always straightforward. Even developers that evaluate costs associated with their own businesses sometimes have difficulty in separating costs that are fixed from those that vary with output.[158] Individualized information and analysis are required to determine whether even adeveloper that sets prices based on short-term profit-maximization would reduce prices given the claimed lower service fee rate. This requires an app-by-app analysis to determine whether any individual developer or consumer suffered antitrust impact or injury.

2. Developers' Strategy of Setting Prices

i. *Prices that end in "99"*

148. Another factor that explains why determining prices in the but-for world requires an app-by-app inquiry is that developers employ different pricing strategies, including the strategy of setting retail prices that end in "99."

149. Many app, subscription, and IAP prices are set to end in "99," such as $0.99, $1.99, and $2.99. These price points may influence consumers' perceptions of price and thus affect sales.[159] Academic studies suggest that some consumers may pay less attention to the rightmost two digits of a price, so that a price of $0.99 is perceived to be significantly more attractive than $1, even though it is only one cent lower.[160] As shown in Figure 7 over the period from August 2016 to July 3, 2021, [redacted]

158 [redacted]

159 See, for example, Stiving, Mark and Russell S. Winer, "An Empirical Analysis of Price Endings with Scanner Data," *Journal of Consumer Research*, Vol. 24, No. 1, 1997, pp. 57-67 at 57 ("Managers apparently set prices in a manner consistent with the premise that the last digit of a price has a significant impact on sales. Several surveys on what price endings managers actually use have been conducted, and all of these surveys support the premise that firms set prices to appear that they are just below a round number."). See also Schindler, Robert M. and Patrick N. Kirby, "Patterns of Rightmost Digits Used in Advertised Prices: Implications for Nine-Ending Effects," *Journal of Consumer Research*, Vol. 24, No. 2, 1997, pp.192-201 at 193-194; Anderson, Eric and Duncan Simester, "The Role of Price Endings: Why Stores May Sell More at $49 than $44," 2000, at http://ssrn.com/abstract=232542.

160 Bizer, George Y. and Robert M. Schindler, "Direct Evidence of Ending-Digit Drop-Off in Price Information Processing," *Psychology & Marketing,* Vol. 22, No. 10, 2005, pp. 771-783 at 771-772.

150. Developers that rely on this strategy to set prices would not reduce prices in response to lower service fee rates if the reduction from one price point to the next would be so large that the developer would lose profits. For example, if a developer's price is initially set at $1.99 and a change in some supply or demand factor would lead to a new profit-maximizing price of $1.63, a developer that sets prices to end in "99" may elect to keep the price at $1.99 instead of reducing the price to $0.99 because profits at $1.99 are higher than profits at $0.99 (and the developer would not want to abandon its pricing strategy and set the price at $1.63). Figure 8 below shows the implied percentage reductions from one price point to another for prices that range from $5.99 to $0.99. A developer with a price of $5.99 would have to reduce prices by 17% to get to the next price point price of $4.99; a developer with a price of $1.99 would have to reduce prices by over 50% to get to the next price point of $0.99. Absent other competitive pressures, a profit-maximizing developer that found it would be worse off by reducing prices from one price point to another would choose not to reduce prices at all.

Figure 8. Percent Reductions from Price Point to Price Point

Source:

Exhibit 33.

151. Many app, subscriptions, and IAP prices exhibit the "stickiness" associated with this strategy. Across all three of these types of transactions, [redacted][161] This confirms that developers' reliance on this type of pricing strategy would inhibit price changes in response to service fee rate changes.

152. Given the prevalence and effect of setting prices to end in "99," an individualized assessment of each developer's pricing decisions would be required to understand the actual and but-for prices to determine if prices would have been different in the but-for world and if a consumer was, in fact, injured.

ii. *Developers' Other Price Setting Strategies*

153. Developers use other price-setting strategies, besides short-term profit maximization. For example, Pure Sweat Basketball's decision to lower its monthly subscription price in 2015 from $29.99 to $9.99 was driven by an attempt [redacted][162] Little Hoots selected its price [redacted] Rescue Pets sets prices to [redacted]

161 See this report's production.

162 [redacted]

163 [redacted]

[redacted][164] Other developers clearly do not operate based on a short-term profit maximization strategy. From the time it initially launched as an app, in 2010, until 2013, Instagram generated no revenue from any source. It was only a year after it was purchased by Facebook that it began to generate any revenue, which it did primarily through advertising.[165]

154. Developers' decisions regarding price changes in the but-for world depend on their pricing strategies. Given that these strategies vary across developers, an individualized analysis of developers is required in order to determine whether a price would have been lower in the but-for world and consumers who purchased those developers apps, subscriptions, or IAPs were impacted.

3. Competitive Conditions Across Apps

155. Another important factor that affects changes in retail prices due to changes in service fee rates is the economic relationships between and among apps. Apps are highly differentiated products and have complex economic interrelationships. Some apps are substitutes and others are complements. If, in response to a service fee rate reduction, some price falls, the demand for competing apps would tend to fall, which would put downward pressure on the prices of those substitute apps. Developers that face more competition will face more pressure to lower prices in response to service fee reductions. Developers that face less competition (from substitute apps) will face less pressure to reduce prices. The extent of competition can be measured by the price elasticity of demand for the app. An app that faces competition from many substitutes will have a more elastic demand than an app without such competition.[166]

156. Determining the price elasticity of demand for an app can be highly complex and individualized because apps are highly differentiated products and there can be many potential substitutes. U.S. consumers made app, subscription, or IAP purchases from [redacted] different apps during the class period.[167] Moreover, consumers download and use many other apps that are free as well as apps that are paid or have subscriptions and IAPs. For example, among six of the consumer class representatives (those that have produced

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164 [redacted]

165 https://www.investopedia.com/articles/investing/102615/story-instagram-rise-1-photo0sharing-app.asp (Instagram launched in 2010, purchased by Facebook in 2012 for $1 billion in cash and stock); https://www.nytimes.com/2015/06/03/technology/instagram-to-announce-plans-to-expand-advertising.html (first used ads in 2013). Even developers who rely on a profit-maximizing price-setting strategy are different from one another because they rely on different and sometimes multiple sources of revenue. Many developers generate revenue from advertising as well as paid installations, subscriptions, and IAPs. If those developers set prices to maximize short-term profits and generate revenue from advertising as well as paid transactions, a reduced service fee rate may lead to higher retail prices, not lower retail prices.

166 As Mr. Adam Sussman, at Epic, described, [redacted]

167 See this report's production; App-level Spend Data, Consumers, GOOG-PLAY-005535886 and GOOG-PLAY-010801688.

information), the total number of apps installed or updated between August 2016 to October 2021 ranged from [redacted][168]

157. App differentiation can be observed by the numerous categories of apps. Google Play has 35 categories for non-game apps and 17 different game app subcategories.[169] The categories vary widely; for example, non-game apps include apps for education (over [redacted] apps), business (over [redacted] apps), shopping (over [redacted] apps), and other categories.[170]

158. Within each of the numerous app categories, there are many apps that may be substitutes to varying degrees and apps that may not be substitutes at all. For example, in the Arts & Design app category (which includes over [redacted] apps),[171] Sketchbook, My Drawing, and Tayasui Sketches are all drawing apps, with different features.[172] Those apps, based on their product characteristics, may be potential substitutes for one another. On the other hand, Pixel Studio and U Launcher are two apps also categorized as Arts & Design apps.[173] Pixel Studio, is a pixel art editor for artists and game developers. It has numerous features, including tools that allow the user to create animations, custom brushes, and symmetry drawing. U Launcher, on the other hand, provides customizable home screens for Android phones with various backgrounds, as well as the ability to hide/unhide apps and search apps. Even though these two apps are included in the same category – Arts & Design – they have different purposes and functionality and are directed toward different sets of consumers. As such, Pixel Studio and U Launcher are likely poor substitutes for one another. Google's "Games" category is also broad and includes games for toddlers such as "Thomas and Friends" (described as a "fun, safe & interactive game play for children aged 2-7"),[174] action

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168 These counts include free apps, paid apps, subscription apps, and apps with IAPs. The counts exclude apps by OEMs and carriers that may have been pre-installed by them and also exclude Google apps. See Exhibit 22.

169 See Exhibit 2 for the list of non-game categories and the percentage of apps in each of the categories. See Exhibit 3 for the list of game categories and the percentage of apps in each of the categories.

170 Exhibit 2.

171 Exhibit 2.

172 Sketchbook, https://play.google.com/store/apps/details?id=com.adsk.sketchbook, accessed March 22, 2022. My Drawing, https://play.google.com/store/apps/details?id=com.raed.sketchbook, accessed March 22, 2022. Tayasui Sketches, https://play.google.com/store/apps/details?id=com.tayasui.sketches, accessed March 22, 2022.

173 Pixel Studio, https://play.google.com/store/apps/details?id=com.PixelStudio, accessed March 22, 2022. U Launcher, https://play.google.com/store/apps/details?id=com.phone.launcher.android, accessed March 22, 2022.

174 Thomas & Friends: Magic Tracks, https://play.google.com/store/apps/details?id=com.budgestudios.googleplay.ThomasAndFriendsMagicalTracks, accessed March 28, 2022.

game "Doom" (described as "Violence, Blood and Gore" for ages 17+),[175] Zynga's card game "Poker – Texas Hold'em,"[176] and home design game "Redecor."[177]

159. Paid apps, subscription apps, and apps with IAPs can be substitutes for free apps. Free apps account for a substantial percentage of apps in all categories.[178] Determining whether the prices of paid apps, subscription apps, or IAPs would have been lower in the but-for world requires analyzing the economic relationships between those apps and the free apps that they compete with, if any.

160. Since different apps face different competitive conditions, an individualized analysis of the competitive pressures on each app is required to assess whether there would have been any changes in the app, subscription, or IAP prices in the but-for world.

C. Economic Reasons Some Members of the Putative Consumer Class Would Not Be Better Off in the But-For World

161. As described above, the proposed class of consumers includes over 92 million U.S. consumer IDs with varying purchase characteristics including, for example, the number of apps purchased (or made purchases from), the number of free apps downloaded, the types of apps purchased and downloaded, the amount of money spent, the prices paid, and the forms of payment used to make purchases, as well as others. Consumer Plaintiffs claim that they would have been better off in the but-for world because the prices they paid for apps, subscriptions, and IAPs would have been lower. However, whether prices would have been lower in the but-for world requires an app-by-app inquiry into (1) whether that developer's service fee rate would have been lower in the but-for world, and (2), if so, whether the developer would pass through that reduction in the service fee rate, to the consumer.

162. There are additional factors that must be considered to determine whether a consumer would have been better off in the but-for world. These factors likewise involve an app-by-app analysis of each consumer's purchases and downloads. As further explained in the sections below, several categories of consumers likely would not be better off in the but-for world, and thus likely would not have experienced antitrust impact.

163. First, some consumers make purchases from developers that set low prices such as $1.99 or less. As discussed above, because those developers likely would not have lower cost options for payment processing in a but-for world, they likely would not have lower service fees for these low-price transactions. Under Consumer Plaintiffs' theory of impact – which posits that developers would respond to lower service fees by reducing retail prices for apps subscriptions, and IAPs – developers that set low prices would have the same service fee rate

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175 DOOM, https://play.google.com/store/apps/details?id=com.bethsoft.DOOM, accessed March 28, 2022.

176 Zynga Poker- Texas Holdem Game, https://play.google.com/store/apps/details?id=com.zynga.livepoker, accessed March 28, 2022.

177 Redecor - Home Design Game, https://play.google.com/store/apps/details?id=fi.reworks.redecor, accessed March 28, 2022.

178 See Exhibit 2 and Exhibit 3.

and charge the same retail prices in the but-for world as they do in the actual world. U.S. consumers who only made purchases at low prices would not necessarily be impacted.

164. Second, some consumers rely on relatively expensive forms of payment to transact in Google Pay, such as direct carrier billing ("DCB") and gift cards. For example, named Consumer Plaintiff [redacted] used [redacted] to make purchases on Google Play.[179] [redacted] Developers may not find lower cost options for those forms of payment in the but-for world and would either continue to use Google Pay Billing or elect not to offer consumers those payment options. Consumers who prefer and benefit from the availability of those forms of payment either would not be impacted or would have been worse off with respect to those transactions.

165. Third, many consumers download and use free apps. Google Play does not collect service fees from free apps. If Google elects to charge fees on free apps in the but-for world, according to Consumer Plaintiffs' own expert's reasoning, those fees could be passed through to some consumers and consumers who download many free apps would face higher prices on those apps that may or may not offset any reduction in prices on other apps.

166. Fourth, security costs to some consumers likely would be higher due to fewer (or no) security warnings by Google in the but-for world.

167. Fifth, many U.S. consumers paid relatively small amounts for apps, subscriptions, and IAPs in Google Play. Overall, [redacted] putative consumer class members paid less than [redacted] over the class period. More than half of putative consumer class members paid less than [redacted][181] These relatively low amounts of consumer spend imply that even if the prices paid for apps, subscriptions, or IAPs were lower in the but-for world, many consumers would save relatively little. For a consumer that spent $5, a reduction in service fee from 30% to 15% that is fully passed through in lower retail prices is $0.75. That amount, if it is even realized by the consumer, must be compared to potentially higher costs the consumer would face in the but-for world to determine whether the consumer is impacted. At a minimum, individualized inquiry is needed to determine whether each of the [redacted] consumers (making up [redacted] of the putative consumer class) who spent less than [redacted] over the class period can show antitrust impact and injury.

1. Some Consumers Would Not Have Lower Retail Prices for Apps, Subscriptions, and IAPs in a But-For World

168. Empirical evidence described in this section shows that service fee rate reductions do not uniformly result in price reductions. When reductions in service fees are not passed onto consumers through lower prices, given the Plaintiffs' allegations, those consumers are not harmed by the alleged conduct affecting service fees for those apps.[182] Identifying those

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179 [redacted]

180 GOOG-PLAY-000337564 at -587.

181 See Exhibit 23.

182 Consumer Plaintiffs attempt to argue that even if prices in the but-for world are not lower, consumers would benefit from "quality improvements in Apps and In-App Content that developers would

consumers that would have paid lower prices in Plaintiffs' but-for world requires an app-by-app, and consumer-by-consumer inquiry.

169. Certain retail prices are the same in Google Play as prices on the relevant developer's website. That is, some developers have chosen not to use different retail prices, even though applicable service fees are potentially different. These developers do not pay a service fee to Google to distribute the content on their own websites, but their retail prices are the same in both channels. For example, the Minecraft game is listed at the same price on Google Play and on the developer's website.[183] A subscription to iHeartMedia has the same retail price on Google Play and the website.[184] A subscription to Pandora Plus has the same retail price on Google Play and the website.[185] This evidence suggests that even if service fee rates on Google Play were lower in the but-for world, some retail prices would not be lower and those consumers who purchased those apps, subscriptions, and IAPs would not be impacted.[186]

170. Those Google Play purchases that would have cost the same if made directly from the developer, where there is no fee to Google, could not have resulted in any loss to the consumer. Moreover, because some developers offer apps, subscriptions, and IAPs through Google Play and their own websites, an individualized analysis of each consumer's transactions is required to determine whether the consumer could have made each of its purchases on a developer's website, and if so, the price available to the consumer from the website.

171. Other developers, in contrast, charge lower prices on their websites than the prices they set on Google Play. For example:

- Pandora Premium offers a subscription to ad-free, personalized music, podcasts, unlimited skips, and make and share playlists, as well as other features. On its website, Pandora offers Pandora Premium for $9.99 per month, with a 60-day free trial period. In Google Play, Pandora Premium is $9.99 per month, with a one-month

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be able finance [sic] out of monies saved from lower take rates." Singer Report at ¶233. Dr. Singer makes no attempt to identify or quantify any quality improvements and doing so would require a highly individualized analysis into existing and but-for characteristics of apps and app content as well as consumer preferences related to such characteristics to determine whether a consumer values any change in those characteristics that may come about due to such "quality improvements."

183 The Minecraft app's price is $7.49 for Android mobile version on the developer's website https://www.minecraft.net/en-us/store/minecraft-android, accessed March 21,2022, as well as in the Google Play Store, https://play.google.com/store/apps/details?id=com.mojang.minecraftpe, accessed March 21, 2022.

184 https://www.iheart.com/offers/, accessed March 24, 2022. Google Play Store price accessed with an Android device as of March 22, 2022.

185 https://www.pandora.com/plans, accessed March 21, 2022. Google Play Store price accessed with an Android device as of March 22, 2022.

186 One of the consumer class representatives, [redacted]

free trial period. If a consumer subscribes for a year, the average monthly prices of the subscriptions, including the varying lengths of free trial periods are $8.33 per month from the Pandora website and $9.16 from Google Play.[187]

- Bookedin, a scheduling app for businesses, offers subscriptions on its website and through Google Play. On Bookedin's website, the Pro 1 subscription is priced at $29 per month for a monthly subscription or $288 per year (an average price of $24 per month) for an annual subscription. Bookedin offers the same subscription through Google Play priced at $34.99 per month.[188]
- Yoga Buddhi offers subscriptions for its Down Dog app on its website as well as from Google Play. Monthly subscription rates are $7.99 per month on its website and $9.99 per month through Google Play; its annual subscription rates are $39.99 per year and $59.99 per year, on its website and Google Play, respectively.[189] According to Yoga Buddhi, the subscription rates through its website are lower than those through Google Play because Google Play charges "commission fees."[190] Yoga Buddhi's CEO says that it offers consumers the option of purchasing a subscription through its website in addition to the in-app option, and 10% of its Android consumers choose to purchase the subscription through the app at the higher price.[191]

172. These examples demonstrate that some app, subscription, and IAP prices might have been lower in a but-for world if service fee rates were lower (setting aside a developer's pricing strategy and other factors for a moment), but other prices would not have been lower. Determining which prices would be lower and which consumers would be impacted thus requires an app-by-app and consumer-by-consumer inquiry.

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[187] See e.g., https://help.pandora.com/s/article/Royalties-and-Spins?language=en_US. ("Pandora, as of September 2016, has entered into direct licenses with record labels, digital music distributors and music publishers for the rights to play music with semi-interactive features on our ad-supported and Pandora Plus services in the US, and for on-demand rights in Pandora Premium. Pandora pays sound recording royalties in accordance with the terms of its agreements with sound recording owners, collection societies and rights administrators. Artist royalties for the ad-supported service continue to be paid through SoundExchange. Royalties for subscription services are paid through to record labels.").

[188] https://bookedin.com/appointment-booking-payment-system-plans-and-pricing/; Bookedin app, https://play.google.com/store/apps/details?id=net.bookedin.bam, accessed March 22, 2022. Google Play Store price accessed with an Android device as of March 22, 2022.

[189] https://www.downdogapp.com/purchase; Down Dog app, https://play.google.com/store/apps/details?id=com.downdogapp, accessed March 22, 2022. Google Play Store price accessed with an Android device as of March 22, 2022.

[190] https://www.downdogapp.com/faq. According to Yoga Buddhi, its music licensing fees depend on the usage of its apps; therefore its marginal costs are positive. See Epic v. Apple Transcript of Bench Trial Proceedings Day 2 (May 4, 2021), p. 358 (testimony from Benjamin Simon, the founder and CEO of Yoga Buddhi (Down Dog).

[191] Epic v. Apple Transcript of Bench Trial Proceedings Day 2 (May 4, 2021), p. 349:5-8; p. 360:8-13; 363:11-25; pp. 365-66 (testimony from Benjamin Simon, the founder and CEO of Yoga Buddhi (Down Dog), stating that 90% of Down Dog's Android users chose to subscribe on the web when the app informed them that prices were lower on the web).

173. I further analyzed price changes in the actual world for apps, subscriptions, and IAPs (collectively, I refer to these as stock-keeping units, or "SKUs"[192]) in Google Play following changes in service fee rates. I found that, among those SKUs, many prices did not change after service fee rate changes took effect.

174. Service fee rate changes during the class period occurred for certain developers and apps due to programs such as [redacted] and others; Google Play's 2018 service fee reduction for certain subscriptions;[193] and Google Play's July 2021 service fee reduction pursuant to the Small Developer Program.[194] These service fee rate reductions applied to [redacted] developers worldwide, to [redacted] and to [redacted] These SKUs involved transactions by about [redacted] of U.S. consumers and accounted for 11% of their consumer spend.[195]

175. While service fees changed for the SKUs in my studies, the prices for many SKUs did not change at all during the class period.[196] Over the three sets of SKUs with service fee

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192 Google's transactions data store IAP and app prices by "product ID," which I will refer to as "SKU."

193 In 2018, Google reduced the service fee rate on subscription IAPs when the consumer's subscription extended beyond a year. See "Google Play Lowers App Subscription Fee to 15 Percent, Matches Apple's Offering," Gadgets 360, October 20, 2017, https://gadgets.ndtv.com/apps/news/google-play-app-subscription-fee-30-percent-to-15-1764923, accessed November 8, 2021. Since different developers and SKUs (e.g., different types of subscriptions) can have a different mix of consumers, the service fee rate associated with a SKU can vary from 30% (no consumer has a subscription more than a year) to 15% (all consumers have subscriptions more than one year). To test whether retail prices would respond to a service fee rate subscription, I look only at SKUs for which the monthly service fee rate for that SKU fell to 20% or lower and remained at that level for at least three consecutive months.

194 The July 2021 service fee rate reduction applied to a developer's first $1 million in consumer spend. I look at SKUs for which the monthly service fee rate for the corresponding app and purchase type (i.e. paid app downloads and non-subscription IAPs) fell to 20% or lower in at least one month on or after July 2021. See "Changes to Google Play's service fee in 2021," Google, https://support.google.com/googleplay/android-developer/answer/10632485, accessed January 5, 2022.

195 Exhibit 34.

196 I used prices net of promotions and discounts in Google Play transaction data from the beginning of the class period to July 3, 2021. See GOOG-PLAY-007203251. Since the transaction data is available for only two days following the July 1, 2021 reduction in service fee rates on the first $1 million of consumer spend, I also used monthly average prices for paid downloads from the App-level spend data for U.S. consumers (GOOG-PLAY-005535886 and GOOG-PLAY-010801688) through December 2021, which correspond with paid download SKUs. A third dataset ("scraped data") was used to analyze paid app download SKU prices following the July 2021 service fee rate reduction. That dataset was created by electronically collecting data for a sample of apps from Google Play once a month, for the paid download prices for those apps. The scrapes were conducted from the U.S., at the beginning of the month starting in April 2021 and collected various attributes of the apps from their publicly available Google Play pages, including their paid download prices. The apps sampled included (1) the top 20 apps in each app category and monetization type based on their 2020 consumer spend; (2) the apps of the top 20 putative developer class members or developers selling to U.S. consumers based on their 2020 spend; (3) the six top 200 charts on Google Play for "free," "grossing," and "paid" apps and for games vs. non-games; and

reductions, [redacted] exhibited no change in price at all during the class period.[197] That is, among these SKUs, at most [redacted] responded to the service fee rate change in the actual world. Moreover, among this [redacted] some retail prices could have increased rather than decreased and some retail prices likely would have decreased at times that are not relevant to the service fee rate reduction (for example, several months before the rate reduction). However, if the price of SKU associated with a service fee rate reduction is constant throughout the class period – as [redacted]f these prices are – then these is no reason to assume that the price of that SKU would have responded to a service fee rate change in a but-for world either.

176. I also considered prices of the SKUs one month before and one month after the service fee rate change. I compared prices for paid app downloads, subscriptions, and IAPs before and after the service fee rate change for each SKU.[198] Table 5 shows these results. For subscriptions and IAPs, less than [redacted] of prices changed after a service fee rate decline. That would imply lack of impact on consumers for many apps. For paid app downloads, between [redacted]nd [redacted] of prices changed following a reduction in service fee rates. That also suggests limited impact on consumers for many apps. Given how few prices declined following reduction in service fee rates, individualized analysis would be needed to identify which apps, subscriptions, and IAPs prices would have been lower and which consumers would have paid lower prices in a but-for world.

(4) the top 100 free apps in each app category on Sensor Tower that ranks by a combination of factors including active users, downloads, and revenue. The top 100 free app charts by category are from Sensor Tower, https://app.sensortower.com/android/rankings/top/mobile/us/overall. A fourth dataset provided to me by Google showing prices on June 21, 2021, October 16, 2021, and February 6, 2022 ("IAP snapshot data," GOOG-PLAY2-000483364), was used to analyze non-subscription IAP prices following the July 2021 service fee reduction.

197 Exhibit 35.

198 For paid app downloads and subscriptions IAPs I compare prices on June 21, 2021 and October 16, 2021. For non-subscription IAPs, I compare prices on June 21, 2021 and February, 6, 2022. These are prices on these specific days, a snapshot.

177. The analysis described above suggests that while some retail prices could be lower if service fee rates were lower, other prices would not change. The analysis finds the percentage of SKUs with price reductions following a service fee rate change but does not include a study of the economic factors that would explain whether an observed price change was caused by a service fee rate reduction. As described above, those factors include, at least, the marginal cost of an app, the demand elasticity of the app, and the pricing strategy of the app developer – all of which require an individualized analysis of the app and the app developer. That is, determining which prices would have been lower and which consumers were impacted requires an individualized analysis of those factors and how they affect prices of particular apps, subscriptions, and IAPs. That individualized, app-by-app analysis is necessarily to determine whether a consumer who made purchases of that app was impacted.

178. This analysis indicates that Consumer Plaintiffs cannot show injury to all or nearly consumers through common proof, because Consumer Plaintiffs cannot establish through common proof that all consumers would pay a lower price if service fee rates for developers were lower.

2. Some Consumers Who Transact at Low Price Points Would Not Be Better Off in the But-For World

179. Table 6 shows that [redacted] of U.S. consumers in the putative consumer class pay only prices of $0.99 and [redacted]f U.S. consumers pay only prices of $1.99 or lower.

[redacted]

180. As described above, for low price point transactions, a developer's payment processing fee if it chose to independently contract with a payment processor would have been more costly than Google's service fee. These developers could continue to rely on Google Play in the but-for world. With unchanged service fees, there would have been no impact on the developers, and no change in prices to consumers and, therefore, no impact on consumers.

181. These developers could separately contract with payment processors. However, as I discussed above, other payment processors are likely to be more costly than Google Play. If, as Consumer Plaintiffs claim, higher costs lead to higher prices, those developers would raise the prices they charge and the consumers that purchase those apps, subscriptions, and IAPs would have been worse off in the but-for world, at least for those purchases.

182. Determining whether consumers who purchase low price apps, subscriptions, and IAPs are better off in the but-for world must account for either unchanged or potentially higher prices in the but-for world. This requires an app-by-app inquiry to identify such apps. By the same token, identifying consumers who were harmed would require individualized analysis as well. At a minimum, for the [redacted] of consumers who pay only prices of $1.99 or lower, individualized inquiry is required to determine whether each consumer can even show antitrust impact or injury.

3. Consumers Who Use Direct Carrier Billing Likely Would Not Be Better Off in the But-For World

183. Direct Carrier Billing ("DCB") enables consumers to pay for apps, subscriptions, and IAPs through their mobile phone bill. Approximately [redacted] of U.S. consumers use DCB.[199] [redacted] In Consumer Plaintiffs' but-for world, it is likely that Google would have an economic incentive to have varying service fee rates for

199 See Exhibit 38.

200 GOOG-PLAY-000337564 at-587.

different forms of payment or to stop providing particularly costly forms of payments such as DCB.

184. Consumers who rely on DCB as a form of payment for apps or IAPs would not be better off in the but-for world and indeed could be worse off and face higher prices.[201] To determine whether such a consumer was impacted, one would have to evaluate purchases app-by-app to determine whether each purchase would have been subject to a lower (or higher) service fee in the but-for world; whether each purchase would have been subject to a lower (or higher) retail price in the but-for world; and whether, overall, the consumer would have paid more or less money for the same set of purchases in the but-for world.

185. Generally, individualized inquiry is required to determine whether any individual consumer uses DCB and whether that consumer would have been better off or worse off in the but-for world. At a minimum, Consumer Plaintiffs cannot show antitrust impact or injury without individualized inquiry for the approximately [redacted] of U.S. consumers who use DCB.

4. Increased Prices for Free Apps Would Make Some Consumers Worse Off in the But-For World

186. Many consumers install free apps, including both free apps with ads and free apps that do not have ads. In the but-for world, Google could elect to charge service fees for free apps. Dr. Singer's opinion (which I have criticized below) that nearly all fee reductions would have been passed through to consumers, suggests that any fee increases for free apps would also be passed on to consumers in the form of higher prices. Thus, even accepting Dr. Singer's opinion that consumers were injured by a supracompetitive service fee, members of the putative consumer class who also download free apps could be worse off in the but-for world if increased prices for free apps are greater than any decrease in prices of paid apps, subscription apps, and apps with IAPs.

187. [redacted] The effect of alternative monetization strategies for Google Play must be considered in evaluating consumer impact. As I understand Plaintiffs' but-for world, Google Play would not collect any service fees from developers who used different payment processors. Given that a considerable portion of Google Play's revenues are at risk in Plaintiffs' but-for world and Google would continue to incur operating costs to provide developers with the services and benefits in Google Play, it would be economically rational for Google to change its monetization strategy.

188. Google has considered alternative ways to monetize Google Play. [redacted][202] Because about [redacted] of all Google Play developers offer only free apps, [redacted] would mean that [redacted] of all Google Play developers would pay service fees for the first time in a but-for world.[203] If Consumer

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201 [redacted] one of the consumer class representatives, used DCB to make purchases on Google Play. [redacted]

202 See GOOG-PLAY-006990552. [redacted]

203 See Exhibit 7.

Plaintiffs' theory that such costs would be passed through to consumers were right, adding a [redacted] would result in higher prices for free apps. As noted, developers who set retail prices to maximize profits do so by considering marginal revenue and marginal cost. Since [redacted]s a per unit marginal cost, imposing such a fee on developers of free apps would tend to cause their marginal costs to increase and in turn tend to cause retail prices to rise.[204]

189. For these reasons, determining impact for an individual consumer must involve an analysis of the consumer's free apps. For example, one of the consumer class representatives, [redacted] spent a total of [redacted].[205] Even if the prices of all of the apps, subscriptions, and IAPs purchased by [redacted] were allegedly inflated by 15%, the total overcharge for [redacted] would be [redacted]. If only half of the free apps downloaded by [redacted]ecame paid apps and were priced at only $0.99, [redacted] would be worse off in the but-for world, paying more than in the actual world.[206] Determining impact for any consumer must consider not only whether the app, subscription, and IAP prices would be lower in the but-for world, but also whether the developers of free apps downloaded by that consumer would decide to charge for those free apps. This requires individualized app-by-app and consumer-by-consumer analyses.

5. Higher Security Costs for Some Consumers in the But-For World

190. Consumer Plaintiffs' allegation that Google's security warnings and other measures related to security lessen competition does not consider that many consumers value security protection and could be worse off in a but-for world without these protections.[207]

191. Some consumers pay relatively substantial amounts to ensure that their mobile devices and personal information remain secure.[208] Such expenditures are consistent with

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204 [redacted] those costs are more likely to be passed through to consumers. That is, even if the other marginal costs of the developer are zero, a per unit service fee will increase the developer's marginal costs and lead to higher prices in a model in which developers maximize profits (setting aside other issues, such as the demand elasticity and the developer's pricing strategy).

205 Exhibit 22.

206 If [redacted] of the [redacted] free apps became paid apps and were priced at $0.99, [redacted] would pay [redacted] for the apps that had been free. The hypothetical overcharge would have been 15% of [redacted], or [redacted]. See Exhibit 22.

207 Consumer Complaint at ¶43 ("Notably, Google tries to deter sideloading through an array of technological hurdles including a complicated multi-step process requiring the user to make changes to the device's default settings and manually granting various permissions, while encountering multiple, unfounded security warnings that suggest sideloading is unsafe.").

208 It is a basic economic concept that consumers acquire products based on choices that involve the weighing of values and costs. See, for example, Barron, John M. and Gerald J. Lynch, *Economics*, Third Edition, 1992, at pp. 33-39. See also Samuelson, Paul A., "Consumption Theory in Terms of Revealed Preference." *Economica*, Vol. 15, No. 60, 1948, pp. 243-253 at 243 ("the individual guinea-pig, by his market behaviour, reveals his preference pattern – if there is such a consistent pattern."). The fact that some consumers make purchases to avoid security problems reflects the value, that those consumers place on security relative to the cost of obtaining the security.

consumers' valuing the security of their private information.[209] If Google is forced to reduce or eliminate warnings or other conduct related to security, then some consumers likely would find it necessary to spend more on security.

192. Security apps can be expensive and could easily be more expensive than the reduced retail prices for consumers who spend relatively low amounts on Google Play. These types of differences between the actual and but-for world should be considered in determining whether a consumer is better off in Plaintiffs' but-for world.

193. Class representatives install and purchase security and privacy apps.[210] For example, [redacted][212] These class representatives' purchases demonstrate that they were willing to pay relatively high amounts for privacy or security.

194. There are numerous security and privacy apps available, and they are purchased by many consumers.[213] A search of "security apps" in Google Play (e.g., entering "security app" into the Google Play search bar) identifies over 200 different apps. Among the top ten security apps available on Google Play, ranked by U.S. consumer spend, there are two apps that provide security protection by scanning incoming files for malware – [redacted] AVG Antivirus has more than [redacted] consumer installations and [redacted] has more than [redacted] installations. Both apps are free to download but offer subscriptions that range from $0.99 per month ($11.88 per year) to $89.99 per year for [redacted] and $0.99 per month ($11.88 per year) to $104.99 per year for [redacted][214] These subscription amounts are high relative to the amounts many U.S. consumers spend in Google Play over the more than five-year class period: as Table 3 above shows, [redacted] putative

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209 The terms "security" and "privacy" are related and can refer to similar issues. See e.g., https://www.ftc.gov/system/files/documents/reports/privacy-data-security-update-2019/2019-privacy-data-security-report-508.pdf.

210 See Exhibit 39.

211 [redacted]

212 [redacted]

213 McAfee, an on-line protection company and developer of security apps describes internet security as consisting of "a range of security tactics for protecting activities and transactions conducted online over the internet. These tactics are meant to safeguard users from threats such as hacking into computer systems, email addresses, or websites; malicious software that can infect and inherently damage systems; and identity theft by hackers who steal personal data such as bank account information and credit card numbers. Internet security is a specific aspect of broader concepts such as cybersecurity and computer security, being focused on the specific threats and vulnerabilities of online access and use of the internet." See "What Is Internet Security?" McAfee, https://www.mcafee.com/enterprise/en-us/security-awareness/cybersecurity/what-is-internet-security.html, accessed November 18, 2021.

214 See Exhibit 40.

consumer class members paid less than [redacted] over the class period and [redacted] of putative consumer class members paid less than [redacted].

195. In Plaintiffs' but-for world, where Google does not engage in the challenged conduct related to security, some consumers likely would purchase more security and privacy protection. Other consumers might not change spending but could face a higher probability of experiencing a security breach. Determining whether a consumer is impacted must consider not only whether developers' retail prices are lower, but also whether the costs of privacy and security are higher. As shown above, the cost of security can be substantial. At the same time, many U.S. consumers spend relatively low amounts in Google Play. For example, as Table 3 above shows, [redacted][215] Even if one of those consumers experienced an overcharge of [redacted] that overcharge [redacted] would have been less than security apps that are [redacted][216]

196. Individualized inquiry is required to determine whether any individual consumer would pay more money for security in the but-for world if Google's security warnings were removed. For those consumers who would pay more for security in the but-for world, further individualized inquiry is required to determine whether that consumer would be better off or worse off overall in the but-for world, and thus whether that consumer can show antitrust impact and injury. At a minimum, this individualized inquiry is necessary for the [redacted] of U.S. consumers who spent less than [redacted] over the class period.

D. Different Members of the Putative Developer Class Likely Would Be Better Off Or Worse Off in a But-For World Depending on How Google Play Changes its Monetization Strategy

197. In determining whether a putative developer class member was impacted, one must consider that Google would have a strong economic incentive to change the way it monetizes Google Play in Plaintiffs' but-for world, especially since Google Play incurs significant fixed costs to provide valuable services and benefits to developers and consumers. In Plaintiffs' but-for world, if one accepts their assumption about lower across-the-board service fees, Google Play would have less revenue due to the lower service fee rate and, presumably, reduced transactions due to the entry and expansion by competitors. Additionally, it is my understanding that Developer Plaintiffs claim that if a developer chose to separately contract for payment processing, Google would not earn any revenue from the developer. Service fees generated from subscriptions and IAPs accounted for [redacted] of total Google Play revenue during the class period.[217] Therefore, in the but-for world described by Developer Plaintiffs,

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215 See Exhibit 23.

216 About [redacted] of U.S. consumers spent less than [redacted] over the class period. A 15% overcharge to these consumers implies a [redacted] overcharge which is still lower than the costs of security over the class period. See Exhibit 23.

217 See Exhibit 4. Plaintiffs' experts acknowledge that Google Play incurs significant fixed costs but fail to take into account that in a but-for world in which Google has fewer transactions, its average fixed costs would increase and its average margin, taking into account those fixed costs, would fall. See Singer Report at ¶262 and Sibley Report at ¶245.

nearly all of Google Play revenues would have been "at-risk."[218] Those revenues, of course, provide a means for Google to support Google Play and invest in services and benefits to developers. Faced with that risk, Google would have an incentive to find some other mechanism to generate revenue for Google Play.[219] Any consideration of antitrust impact must account for potential changes to Google Play's business model in a but-for world. The fact that Google has considered a range of different business models for Google Play in recent years underscores that such changes are at least plausible and should be considered in determining impact. [redacted][220] Different alternative business models would affect some developers differently. Below I discuss certain of these strategy changes and their implications for different sets of developers. Without exception, if implemented, the changes Google has considered would have caused some developers to be better off and others to have been worse off. These changes would also have implications for consumers, leaving some consumers better off and some worse off.

1. [redacted]

198. [redacted][221] Such a strategy would mean that about [redacted] of all Google Play developers[222] [redacted] would, [redacted] The approximately 30% of putative developer class members that also distribute free apps[223] would, [redacted] that they distribute.

199. Depending on the [redacted] other features of Google Play and the number of a developer's downloads, a particular putative developer class member may be worse off with [redacted] than with Google's current service fee rate. For example, [redacted]

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218 As described below, Consumer Plaintiffs' expert, Dr. Singer, asserts that Google Play's share of IAP transactions would decline from about [redacted] to 60% — a nearly 40% reduction in share. Dr. Singer has no basis for his assumption, but it serves to illustrate the potential loss to Google Play in the but-for world and the clear rationale for Google to respond.

219 [redacted] January 14 and 18, 2022, ("Feng Dep.") at pp. 158-159 ("If users are led to a way to pay outside of Play billing today, we would not be able to collect a service fee. I think if that was the main mechanism that purchases are made through Play-distributed apps, it's likely we would find mechanisms to charge a service fee."). [redacted]

220 [redacted] See, for example, GOOG-PLAY-000561051.R (May 2019), GOOG-PLAY-003331592.R (August 2019); GOOG-PLAY-000444214.R (September 2019); GOOG-PLAY-003335786.R (August 19, 2020).

221 See GOOG-PLAY-000336574 at 588; GOOG-PLAY-006990552 at 554, 565 [redacted]

222 Exhibit 7.

223 Exhibit 41.

[redacted] offers an app with over [redacted] downloads and consumer spend of about [redacted] over the class period.[224] At a 30% service fee rate, this putative developer class member's fees would be approximately [redacted]. However, if service fees were assessed at [redacted] service fees would have been about [redacted][225] Depending on the number of downloads and the amount of consumer spend, some developers would have been better off with [redacted] but others would have been worse off.

200. If, in the but-for world, Google had changed its monetization strategy to [redacted] a putative developer class member with [redacted] would have [redacted] that it does not in the actual world. Determining whether a putative developer class member is better off in the but-for world would require analyzing not only the putative developer class member's apps that generate revenue through consumer spend, but also its [redacted].[226]

2. App or Developer [redacted]

201. Google has also considered charging developers fees for [redacted].[227] In the actual world, the only fee Google charges developers

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224 https://play.google.com/store/apps/developer?id=Lowtech+Studios, accessed January 24, 2022; see this report's production.

225 [redacted] See GOOG-PLAY-000336574 at 588; GOOG-PLAY-006990552 at 554, 565. [redacted]

226 Consumer Plaintiffs' expert, Dr. Singer argues that Google [redacted] because it would discourage consumers from using Google Play and thereby reduce the overall value of the platform. He also claims that it is in Google's interest, more broadly, to encourage consumers to use Google Play because it generates revenue from advertising. See Singer Report at ¶¶270-273. Every monetization strategy, however, has certain costs and benefits to Google, consumers, and developers. Google Play's existing strategy provides certain benefits and efficiencies. [redacted] Google must balance these considerations in choosing a method to generate revenues and fund the operation of the store. In a but-for world where its existing strategy is no longer providing Google with the ability to provide a high-quality app store, it will be forced to consider other strategies even if those alternative strategies have certain costs. See e.g., Feng Dep. at pp. 353-355; GOOG-PLAY-003335685.

227 Apple charges developers $99 per year. See https://developer.apple.com/support/enrollment/.

Also, Developer Plaintiffs have suggested that Google should charge free apps a "reasonable fee" for the distribution of apps in Google Play. See Developer Complaint ¶ 210 ("Nor is the tie necessary to prevent "free riding" by developers as to distribution via the Google Play Store. In fact, Google's current model encourages free riding. Among the apps that benefit from being on the Google Play Store but do not sell digital goods are many categories of very valuable commercial apps such as, for example, those used by banks and other financial institutions, brokerages, insurance companies, and real estate services to interact with customers, in addition to those apps that sell billions of dollars of physical goods (e.g., Amazon), services (e.g., Uber), or advertising (e.g., Facebook). Google could elect to charge a reasonable fee for the Google Play Store's distribution services, but it does not. Instead, it reaps a monopolistic windfall from

to publish apps in Google Play is a one-time fee of $25.[228] Google has considered adding [redacted] For example, Google considered several [redacted] The [redacted][229]

202. Many proposed developer class members would be worse off in a but-for world in which Google charged [redacted] As shown in Figure 9 below, during the class period, more than [redacted] of the putative developer class members paid less than [redacted] Service fees for named Developer Plaintiff Peekya App Services were [redacted] during the class period through 2021.[230] If, in the but-for world, Google Play charged these developers a [redacted] instead of the 30% service fee rate, more than [redacted] of these developers' fees would have been lower in the actual world than in the but-for world.

Android in-app payments, to the detriment of developers and consumers alike."). See also Complaint, *State of Utah et al. v. Google LLC*, filed July 7, 2021, Case No. 3:21-cv-05227 ("Plaintiff States' Complaint") ¶ 189.

228 https://support.google.com/googleplay/android-developer/answer/6112435.

229 See GOOG-PLAY-006990552 at 554 and GOOG-PLAY-000565001.R at 019.R. Other amounts considered were a [redacted] Google also considered [redacted] Apple charges developers who list apps in its App Stores a fee of $99 per year. See https://developer.apple.com/support/compare-memberships/.

230 See this report's production.

[redacted]

3. [redacted] Imply Not All Service Fee Rates Would Have Been Lower in the But-For World

203. Documents produced in this case show that Google also considered introducing [redacted] whereby service fee rates would [redacted][231] If Google implemented [redacted] in the but-for world, some developers would not have been impacted.

204. One proposal that Google considered was to reduce the service fee rate based on [redacted] For example, Google considered having a 30% rate for transactions associated with an individual consumer [redacted] but having a [redacted] rate apply [redacted].[232] The distribution of the

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[231] See e.g., GOOG-PLAY-006990552 at 554 [redacted] GOOG-PLAY-003335786.R at 808.R [redacted] See also GOOG-PLAY-003331592.R at 605.R; GOOG-PLAY-000565001.R at 002.R.

[232] GOOG-PLAY-003331592.R at 606.R shows [redacted]

[redacted] would determine the overall service fee rate. If the distribution of a developer's users were skewed toward [redacted] the developer's overall service fee rate would tend toward [redacted]. On the other hand, if the distribution of a [redacted] the developer's overall service fee rate would tend toward [redacted].

205. Many apps generate transactions for [redacted] If Google adopted this [redacted] all the users of those apps would make purchases from the app for [redacted], and all transactions for those apps would have been subject to a 30% service fee rate. Among putative developer class members' apps that were published between 2016 and 2020, [redacted],[233] as seen in Table 7. Thus, for those [redacted] of apps, developers were no worse off in the real world than they would have been in a but-for world with [redacted]

[redacted]

206. Google also has considered lowering the service fee rate for those apps that [redacted] Several ways of implementing this strategy were considered, including different service fee rates depending on [redacted] For example, one structure that Google considered was that a service fee rate of 30% would apply to transactions [redacted] and a service fee rate of [redacted] would apply to transactions [redacted] This alternative monetization strategy would have differential effects across developers depending on how each developer [redacted]

[redacted] See GOOG-PLAY-006990552 at 554.

233 In the data, these are apps with recorded transactions for a period of 12 months or less.

[redacted] Therefore, [redacted] monetization strategy would have benefited those large, well-known developers, while not necessarily benefiting the small or start-up developers that account for a substantial percentage of the proposed developer class members.[235] Individualized inquiry would be required to determine how any developer would have been affected by [redacted] and whether that developer could show antitrust impact or injury.

4. Lower Service Fee Rates Accompanied by [redacted]

207. [redacted] For example, [redacted] in Google Play.[237]

208. Some developers would have been better off if Google had adopted such a strategy. For developers that [redacted] the increased ability to [redacted] would have been an advantage. Those developers would have been able to obtain the services they value in the amount that they choose.

209. However, increasing the [redacted] even with lower service fee rates, would not have benefited developers that rely on [redacted][238] [redacted]

210. A strategy for monetizing Google Play that relied more on [redacted] would have been more costly for developers that [redacted]

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234 See e.g., GOOG-PLAY-003335786.R at 808.R; GOOG-PLAY-0110236932.

235 [redacted]

236 See GOOG-PLAY-006990552 at 554, GOOG-PLAY-003335786.R at 808.R, GOOG-PLAY-003335685 at 694, and GOOG-PLAY-000561051.R at 061.R.

237 See GOOG-PLAY-003335786.R at 808.R and GOOG-PLAY-000561051.R at 061.R.

238 See GOOG-PLAY-003335786.R at 808.R [redacted]

[redacted][239] Some developers have relatively low amounts of consumer spend and therefore have relatively low amounts of service fees – even at a 30% service fee rate. For those developers, it is likely that [redacted] would exceed those service fees.

211. [redacted] could have exceeded the amount of the service fees associated with their apps. [redacted][240]

212. Antitrust impact must consider that Google would have strong economic incentive to change the way it monetizes Google Play in Plaintiffs' but-for world. [redacted] Determining which developers would have been better off in the but-for world varies depending on the monetization strategy Google would have made in the but-for world as well as the characteristics of individual apps and developers.

E. Additional Economic Reasons Some Members of the Putative Developer Class Would Not Be Better Off in the But-For World

213. Determining whether a putative developer class member is better off in the but-for world requires a consideration of the developer's profits, which in turn requires consideration of the developer's service fee rate, prices, and costs in the actual and but-for worlds.

214. As described above, not all service fee rates necessarily would have been lower in the but-for world and it is not necessarily the case that service fees would have been assessed as a percentage of consumer spend. But even if service fee rates would have been based on a percentage of consumer spend and a developer's service fee rate was lower, the developer may still have earned lower profits because the developer's revenues would have been lower or its costs would have been higher in the but-for world.

1. Some Developers Would Have Incurred Higher App Distribution Costs in the But-For World

215. Developer Plaintiffs claim that in the but-for world, there would have been more alternative app distribution channels.[241] Unless all consumers would have utilized all distribution channels (and did so with at least a similar amount of intensity) then developers

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239 See GOOG-PLAY-003335685 at slide 10. [redacted] See also GOOG-PLAY-003335786.R at 814.R.

240 See GOOG-PLAY-006990552 at 554 [redacted]

241 See, for example, Sibley Report at ¶211. Dr. Sibley also concludes that the alleged conduct led to barriers to entry. See Sibley Report at ¶¶175, 202, 207.

would have needed to utilize more app stores than they do in the actual world to reach the same number of consumers or forego distribution to some subset of consumers. That is, in the actual world, consumers utilize a certain number of app stores, including Google Play. In the but-for world, with more app stores, even assuming an increase in competition, consumer demand would have been more spread across more app stores and so, to reach the same number of consumers, developers would have had to offer their apps on more stores.

216. In addition, according to Developer Plaintiffs, there would not only have been more stores in the but-for world, but those stores could have used different "forked" versions of Android.[242] Different "forked" Android operating systems imply that the technical requirements for developers to list apps on stores developed for each fork are different from – that is, mutually incompatible with – one another. Depending on the extent of the differences across variants of Android and app stores, a developer listing an app in multiple stores or models of Android incompatible with one another could have been forced to create different versions of the app (and different versions of each update) for each store.

217. For some developers, distributing through more stores or stores that have varying technical requirements would have increased app distribution costs.[243] For example, when Epic Games Inc. was developing Fortnite for Android, because there were different versions of Android and types of Android devices (implicating different device specifications, screen sizes, etc.), [redacted][244] In a but-for world with even more and more varied platforms, developers like Epic Games would have had to work with even more different platform teams to resolve technical issues and ensure their apps worked well for consumers.

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[242] See, for example, Developer Complaint at ¶¶71-72, Sibley Report at ¶¶222-225. Dr. Sibley refers to Google's contracts with OEMs that "restrict OEMs' ability to manufacture and sell any device that uses a version of Android that is not approved by Google."

[243] See, for example, Deposition of Lawrence Koh, December 9, 2021, ("Koh Dep.") at pp. 30, 36, 134, 321-22 [redacted] See also https://developer.amazon.com/docs/app-submission/migrate-existing-app.html (documentation regarding Migrating an Existing App to the Amazon Appstore) and GOOG-PLAY-000560564 at 575 [redacted]

[244] See Deposition of Christopher Babcock, February 17, 2022, [redacted]

218. Characteristics of an app, as well as characteristics of consumer demand for that app, will affect the degree to which the developer would have been subject to increased distribution costs in the but-for world. For instance, technical complexity of the app and the frequency of updates, affect the difficulty of adapting an app to different platforms and thus affect the amount of increased distribution costs. In addition, those apps would have needed to be monitored more closely, on more platforms, to ensure the app is working properly and satisfies consumer expectations.

219. There is substantial variation across apps in terms of their technical complexity. Apps that perform relatively complex functions, have relatively more features, or work differently on different devices may be more difficult and costly to adapt to different platforms. Simple apps, on the other hand, will generally be easier and less costly to adapt. Some measures of app complexity used in the literature include the size of the app and the version of the Android operating system required for the app to perform among other characteristics.[245]

220. Some apps that require more frequent updates would have incurred higher distribution costs in the but-for world, because the apps would have needed to be updated in multiple stores on multiple different platforms. Updates are performed both because the app must be revised to "fix bugs" or to upgrade security as well as because updates provide improvements such as new features or enhancements.

221. Developers' costs in the but-for world also may have been higher for other reasons. There are costs associated with transacting with an app store, including, for example, the costs of understanding and complying with each app store's terms and conditions, and marketing the app in each store. As a developer offers an app in more stores, those costs can increase.[246]

222. Characteristics of consumer demand for an app would likewise affect distribution costs in the but-for world. If the app's value increases with the number of users – as the value of dating apps, social network apps, and multi-player gaming apps, for example, do – the success of the app will require broad distribution across multiple stores and the developer

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[245] See, for example, Ghose, Anindya, and Sang Pil Han, "Estimating Demand for Mobile Applications in the New Economy," Management Science, Vol. 60, No. 6, 2014, pp. 1470-1488. According to these criteria, a relatively simple app, with relatively few features is KLWP Live Wallpaper Pro Key, an app categorized as a "Tool," published by Kustom Industries. The size of the app is 1.8 megabytes; it requires Android version 4.4 or higher. An example of a relatively complex app is Five Nights at Freddy's AR: Special Delivery, an app categorized as a Strategy Game, published by Illuminix Inc. The size of this app is 185 megabytes; it requires Android version 7.0 or higher. https://play.google.com/store/apps/details?id=org.kustom.wallpaper.pro; https://play.google.com/store/apps/details?id=com.illumix.fnafar.

[246] See [redacted]

will have strong incentives to incur additional distribution costs. Some developers require broad distribution to attract the few paying consumers that account for a substantial amount of overall paid transaction revenue. Many apps that are free to download, for example, have a high number of users but derive revenue from IAP transactions from a relatively small number of those users. Zynga Inc. is a developer of apps that are free to download. Its paying consumers account for about 3% of the total number of consumers that download the app.[247] Zynga needs broad distribution of its app to find the customers that generate revenue.

223. Listing an app in multiple stores can also make discovery of the app more costly. The success of some apps for some developers is driven, at least in part, by obtaining a given number of downloads in a store[248] or reaching the "top" of an app category.[249] The benefits from the discovery associated with such featuring will be more difficult to obtain if the app must split its downloads across multiple stores.

224. Variation across developers in the factors that affect distribution costs in the but-for world implies that determination of impact will vary across developers, requiring individualized inquiry for each developer.

2. Some Developers Likely Would Have Obtained Fewer App Distribution Services in the But-For World

225. Google provides developers with numerous valuable services.[250] In a but-for world, Google could have adjusted the type and/or level of services provided to developers. Changes in the services offered or the terms under which the services were offered would have had a differential impact on developers depending on how valuable a particular service is to them and whether they could have afforded to purchase the service from Google or elsewhere.[251]

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247 Zynga Inc. Form 10-K, 2020, at p. 3.

248 See, for example, [redacted]

249 See, e.g., https://www.storemaven.com/academy/how-to-choose-an-app-category/ ("The category you choose needs to be relevant to your app, of course. But it should also enable your app to rank well in category charts. Users often discover new apps to download by perusing the charts. This means that high-ranking apps generally receive a lot of traffic and are able to generate more organic downloads… The category you choose for your app can affect its discoverability and conversion rates in both the Apple App and Google Play stores. The trick to choosing the right category for your unique app is balancing relevance with your competition."); https://support.google.com/googleplay/android-developer/answer/9859673 ("You can choose a category and add tags to your app or game in Play Console. Categories and tags help users to search for and discover the most relevant apps in the Play Store.").

250 See Appendix D.

251 See GOOG-PLAY-003335786.R at 808.R [redacted]

226. In the actual world, Google made many investments focused on developers who generate revenue from consumer spend, such as subscription services, numerous different forms of payment, and others. In Developer Plaintiffs' but-for world, if Google were generating revenue in some other way, those investments would likely have been refocused and the putative developer class members that generate revenue from consumer spend may not have had the same tools and services in the but-for world from Google. Whether developers could have obtained the same tools at the same cost depends on the tools needed by the developer and their cost from other sources. Developers that earn revenue from IAPs could have been worse off than developers that earn revenue from ads, for example, because Google would have had economic incentives to invest more in tools for ads than in tools for IAPs.[252]

227. Certain payment processing services are more costly than others and if in the but-for world Google were forced to reduce its service fee rate, some of those services may not have been provided. For example, as discussed above, approximately [redacted] of the U.S. consumers use DCB.[253] [redacted][255] Developers that rely more on DCB would have been worse off than developers not reliant on that payment form. Individualized inquiry is required to determine which developers would be better off and which developers would have been worse off in the but-for world.

228. If, in the but-for world a developer had to spend more to obtain services than it saved in lower service fees, the developer would have been worse off. About [redacted] of the putative developer class members generated [redacted] or less in consumer spend across all years of the class period and therefore would have had (at most) [redacted][256] If, in the but-for world, any of these developers had to separately purchase a service that was previously obtained through Google Play, and the [redacted], the developer would have been worse off in the but-for world.

[redacted]

252 Marchak Ex. 375 (GOOG-PLAY-007628059) at 065 [redacted]

253 See Exhibit 38.

254 See GOOG-PLAY-000337564 at-587.

255 See GOOG-PLAY-006990552 at 555.

256 Exhibit 9 and Developer Complaint at ¶244.

VII. DEVELOPER PLAINTIFFS' EXPERTS HAVE NO BASIS FOR THEIR CLAIM THAT ALL DEVELOPERS WOULD HAVE BEEN SUBJECT TO A LOWER SERVICE FEE RATE IN THE BUT-FOR WORLD

229. Developer Plaintiffs' expert, Dr. Sibley, offers an overly simplistic description of the but-for world and opinion of common impact. According to Dr. Sibley, absent the alleged conduct, "more alternative app distribution options would be available to a larger number of developers of Android apps," and the availability of those "competitive options" would have the effect of aligning prices more closely to costs.[257] Dr. Sibley states that in the but-for world, Google would face competition for all developers because all developers would "enjoy competitive alternatives," and faced with such competition, "it is likely that Google would reduce its default service fee offered to all developers below 30%"[258]

230. In this section, I discuss Dr. Sibley's opinion on classwide impact. First, I show that Dr. Sibley's finding of classwide impact is contradicted by his own finding that some developers "resisted" Google's alleged conduct and negotiated "competitive" service fee rates in the actual world.[259] Dr. Sibley's admission that some but not all developers obtained "competitive" rates in the actual world shows that he ignores differences across developers that would continue to exist in the but-for world so that only some, but not all, developers in the but-for world would obtain lower service fees.

231. I next address the bases for Dr. Sibley's conclusion that all developers were impacted because in the but-for world, all developers' apps supposedly would benefit from increased competition and, as a result, all developers' service fee rates would have been lower.[260] Dr. Sibley's opinion is an assumption. Even accepting Dr. Sibley's claim that there would have been an increase in competition in the but-for world, it is not necessarily the case that all developers would obtain lower service fees from the increase in competition. Classwide impact cannot be assumed. An analysis is required to determine whether each developer would benefit from such an increase in competition.[261] Determining whether a developer

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257 Sibley Report at ¶211, 250.

258 Sibley Report at ¶258.

259 Sibley Report at ¶¶ 255-57. Dr. Williams, another Developer Plaintiff Expert, utilizes the service fee rates obtained by these putative developer class members as a benchmark for the but-for service fee rate. See Williams Report at ¶60.

260 Dr. Sibley claims that all developers would have lower service fees in the but-for world. See Sibley Report at ¶258 ("In the but-for world, Google would face competition for *all* developers, including those paying the 30% service fee, because *all* developers would enjoy competitive alternatives.") [emphasis in original]

261 In other industries, increases in competition have been found to benefit some, but not all customers. For example, increased competition on airline routes have been found to reduce prices for leisure travelers but not change prices for business travelers. See Stavins, Joanna, "Price discrimination in the airline market: The effect of market concentration," *The Review of Economics and Statistics*, Vol. 83, No. 1, 2001, pp. 200-202. Similarly, researchers found that in analgesics, competition leads to lower prices on Tylenol's price, while increasing the store-brand's price. See Chintagunta, Pradeep K., "Investigating category pricing behavior at a retail chain," *Journal of Marketing Research*, Vol. 39, 2002, pp. 141-154.

would have been better off in the but-for world depends, at least, on that developer's individual characteristics, which Dr. Sibley failed to analyze.

A. DEVELOPER PLAINTIFFS' EXPERTS CONCEDE THAT CERTAIN DEVELOPERS WERE NOT IMPACTED BECAUSE THEY WERE ABLE TO OBTAIN THE ALLEGED "COMPETITIVE" SERVICE FEE RATE

232. According to Dr. Sibley, there are numerous developers that were able to "resist" Google's alleged conduct and obtain "competitive" service fee rates, and thus were not impacted.[262]

233. Dr. Sibley acknowledges that in the actual world developers are different. He admits that some developers that sought alternative billing or distribution options and/or [redacted] [263] According to Dr. Sibley, these are "examples [that] illustrate how Google responds to competition."[264] Thus, Dr. Sibley recognizes that in the actual world, Google responded to competition by providing some – but not all – developers with lower rates and more services and those developers obtained competitive service fee rates.

234. Dr. Sibley identifies numerous developers that, in his words, were able to "resist" the alleged conduct. [redacted] the developers that obtained lower rates in 2018 when Google lowered the rate for subscription IAPs, [redacted]

235. Dr. Williams, another expert for Developer Plaintiffs, also asserts that because Google faced "meaningful competition," it had to reduce its service fee rates to [redacted] for certain developers.[265] [redacted] According to Dr. Williams, a 15% service fee rate is a competitive benchmark for a service fee in the but-for world.[266]

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262 Sibley Report at ¶¶102-103 [redacted]

263 Sibley Report at ¶239 [redacted]

264 Sibley Report at ¶257.

265 Williams Report at ¶60; see also Williams Report at ¶¶50-59.

266 Williams Report at ¶63. According to Dr. Williams, the use of Google Play's service fee rate for developers that were able to "resist the tie," is a "strong yardstick" for a competitive service fee rate. See Williams Report at ¶67. According to Dr. Sibley, there were [redacted] developers that were able to "resist" the alleged tie. See Sibley Report at ¶188.

236. Dr. Sibley provides no reason (or evidence) that these developers would obtain further reductions in service fee rates in the but-for world and does not explain why the developers could have been impacted on transactions that occurred at other rates or in time periods prior to Google Play's programs, given that those developers were able to "resist" Google Play's alleged conduct. Moreover, Dr. Williams' use of these developers as a competitive benchmark contradicts that there would have been any further rate reductions for those developers in the but-for world.[267] Those developers that were able to negotiate a 15% rate, [redacted], then, were not impacted by the alleged conduct.

B. Developer Plaintiffs' Expert's Opinions Regarding Common Impact Are Not Supported By Economic Theory or the Evidence

237. Dr. Sibley offers five arguments to support his opinion that all developers would have lower service fees in the but-for world. However, these arguments are not supported by evidence of the actual world or by economic logic.[268] I discuss each below.

1. Dr. Sibley's Claim that Competition Would Have Been More Robust for All Developers Ignore Facts of the Case

238. Dr. Sibley's argument that all developers' service fee rates would have been lower in the but-for world because "competition for all developers would be more robust" ignores what he has acknowledged about the actual world – that there are meaningful differences across developers and how competition impacts developers.[269] Dr. Sibley admits that differences across developers led to lower service fee rates for some developers, but not all developers. Developers that have been able to negotiate particular deals with Google Play are the developers with popular apps that can more easily attract and divert users to competing platforms.[270] As I explained above, this is true not just for Google Play, but for app stores

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267 Williams Report at ¶67 ("The material distinction between the yardstick market and the broader Android IAP platform services is the effect of the challenged conduct because Google had not enforced its tie as to the yardstick developers.").

268 Sibley Report at ¶¶259-275. It is my understanding, based on Dr. Williams' report, that he is offering expert opinions related to damages, not classwide impact. See Williams Report at ¶61 ("In the but-for world, as Dr. Sibley shows in his report, all developers would have the option of distributing their apps and in-app products…and incentivize Google to reduce its service fee across the board."). Moreover, Dr. Williams does not study or analyze the question of classwide impact, with his damage analysis instead being predicated on the assumption that all developers are the same and the but-for service fee rate is the same for all developers.

269 Sibley Report at ¶¶259-260.

270 Dr. Sibley acknowledges that "network effects" are relevant to app store competition such that rival platforms compete by attempting to obtain a "critical mass of users and developers." See Sibley Report at ¶116. Obtaining such a "critical mass" most efficiently involves attempting to persuade developers with the most popular apps to switch stores or to stay with a store and likewise persuade app users that spend the most to switch stores or to stay with a store. For rival platforms that wish to generate revenue from sales of apps and IAPs, it makes economic sense to concentrate on getting the most popular revenue-generating apps and the highest value app users (i.e., users with the greatest amount of spend) to switch. As shown above (see Exhibits 14.5 and 19) revenues and spend are concentrated among a small

more generally; that is, [redacted][271]

239. The ability to drive consumers and revenue from one store to another, and thus, the ability to negotiate a lower service fee rate (or expanded services), is different across developers, or at least across different types of developers. This explains the rate reductions observed in the actual world and demonstrates that service fee rate reductions would not occur for all developers in the but-for world.

240. In the but-for world, the assumed increase in competition would therefore be expected to lead to differential effects across developers – those developers that can drive consumers from one platform to another through the popularity of their apps will be the developers that are more likely to obtain lower service fees or additional services.

241. Furthermore, Dr. Sibley's argument that competition for developers by alternative payment processors "would be expected to provide all class members with competitive options for IAP transaction services in the but-for world" does not consider that for a substantial percentage of developers, Google Play's service fee rate likely is already the most competitive option. As I described above, Google Play's service fees are lower than the fees some developers would need to pay if they separately contracted with payment processors.[272] Even setting aside the other valuable services Google Play provides in addition to payment processing, these other processors' rates would be higher than 30% for certain developers. For those developers that offer apps or IAPs at low price-points, independently contracting with payment processors is not an economic option. [redacted] of putative developer class members offer apps, subscriptions, and IAPs at prices of $0.99 (only) and therefore the payment processing costs of many processors for those developers may be higher than 30%.[273] [redacted] of developers offer apps, subscriptions, and IAPs at prices of $1.99 or lower. Other developers that offer apps and IAPs at multiple different price points, including these low price-points, could also find that separately contracting with payment processors is not more affordable, depending on the mix of their transactions. Identifying those developers would require analyzing the product-price mix (the percentage of transactions at each price point) and determining whether the proportion of low-price point sales causes the 30% rate to be higher or lower than the rate a developer would have if it independently contracted with a payment processor. Contrary to Dr. Sibley's assumption, not all developers necessarily would have had the option of lower service fees in the but-for world, and therefore it cannot be assumed that they are impacted by the alleged conduct.

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percentage of developers and app users. Therefore, one would not expect competition to be concentrated on all app developers or all app users.

271 GOOG-PLAY-000568027 at 028; See [redacted]

272 See Sibley Report at ¶¶261, 198.

273 See Exhibit 31.

Determining whether contracting separately with a payment processor is an economic option requires an individualized analysis of the developer's apps, prices, and transactions.

2. Dr. Sibley's Claim that All Developers in the But-For World Have a Better "Best Option" Is Without Basis

242. Dr. Sibley's assumption that in the but-for world, a developer would have been able to negotiate lower service fee rates because the developer's "best option if negotiations break down" would have been better is not true for all putative developer class members.[274]

243. Dr. Sibley's assumption that a developer's "best option" would have been better in the but-for world may not be true for at least [redacted] of putative developer class members that rely solely on prices of $0.99 and would not have had a better option in the but-for world for payment processing.[275] Thus, it is likely that at least [redacted] of the putative developer class members cannot show antitrust impact. Moreover, the percentage could be higher because more developers, depending on their mix of transactions across different price points also would not have better options than a 30% service fee rate. This includes the [redacted] of developers that price apps, subscriptions or IAPs at $1.99 or lower.[276] Individualized inquiry of each developer and their transactions is thus required to determine whether any developer is better off or worse off in the but-for world and whether the developer can show antitrust impact.

244. Additionally, developers that rely on relatively more costly forms of payment [redacted] similarly would have been at a relative disadvantage compared to other developers in the but-for world. [redacted][277] For some putative developer class members, [redacted][278] Dr. Sibley hasn't considered whether developers that rely on those forms of payment would have a better "best option" in the but-for world.

245. Dr. Sibley fails to acknowledge that whether developers' "best option" would have been better in the but-for world generally depends on the nature of the purported increased competition in the but-for world. An increase in competition from an expansion of the Samsung Galaxy Store would not present a better "best option" to developers that rely on consumers with mobile devices other than Samsung (since that app store serves only Samsung's devices).[279] Entry by a company like Epic, a game app developer, may provide

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274 Sibley Report at ¶¶263-264.

275 See Exhibit 31.

276 See Exhibit 31.

277 See e.g., GOOG-PLAY-000437819 at 838 (showing transaction costs for DCB of [redacted] in 2016) and GOOG-PLAY-000337564 at 587 (showing DCB costs to Google of [redacted] and cost for developer to replicate of [redacted]; and showing gift card costs to Google of [redacted] and cost for developer to replicate of [redacted]).

278 GOOG-PLAY-005535885 and GOOG-PLAY-010801689.

279 Deposition of Lawrence Koh, December 9, 2021, ("Koh Dep.") at p.323.

an additional option for game apps but may not for non-game apps.[280] And while the Amazon Appstore serves Android devices, [redacted][281] So, expansion by Amazon or entry by an app store like Amazon would not necessarily provide a better option to all developers.

246. Finally, even if a "better option" exists for a developer in the but-for world, the developer may not have the ability to negotiate a lower rate if it does not have a popular, revenue-driving app. Such developers have less negotiating leverage because even if the developer left Google Play (or any other app store) it would not drive consumers away from Google Play and toward some rival store. Moreover, according to Dr. Williams, developers generally do not pass through savings on reduced service fee rates to consumers and so, according to his opinion, developers would not use differences in retail prices to drive consumers from one store to another.[282]

3. Dr. Sibley's Claim Regarding Competition in PC App Stores Contradicts His Conclusion of Classwide Impact

247. Dr. Sibley's claim that all developers would have lower service fee rates because Google would respond to competition like Microsoft responded to the entry of Epic in PC app distribution is based on a mistaken and incomplete understanding of app stores' response to Epic's entry.[283]

248. The Epic Game Store distributes game apps for PCs; it began operations in December 2018 and charged a 12% service fee rate.[284] The two primary PC game app stores at the time of Epic's entry were (and continue to be) Microsoft and Steam. Microsoft distributes game apps for its Xbox gaming consoles and both game apps and non-game apps for PCs with

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280 See Exhibit 11 showing [redacted] of "U.S." developers offer only non-game apps during the class period.

281 See GOOG-PLAY-000310705. See also Feng Dep. Ex. PX 531 at p. 19 [redacted]; Feng Dep. Ex. PX 532 at p. 4 [redacted]

282 Williams Report at ¶73. As discussed below, whether developers pass through reduced service fees requires an individualized analysis of a developer's apps and the economic factors that affect pass-through.

283 Sibley Report at ¶¶265-267.

284 https://techcrunch.com/2018/12/06/epic-games-store/ (article dated December 7, 2018, reporting that the Epic Games Store "quietly went live today"); https://www.epicgames.com/site/en-US/epic-games-store-faq ("The Epic Games Store currently offers PC and Mac support. You can check platform compatibility for individual titles by referring to the "About Game" section of any product page." "…creators will earn 88% of all the revenue from their game…").

Windows operating systems.[285] Prior to Epic's entry, Microsoft charged a service fee rate of 30% for game apps on PCs, the same types of apps as those distributed by Epic, and a 30% rate for non-game apps. Microsoft maintained its 30% service fee rate for game apps on PCs until August 2021 – over two years after Epic's entry.[286] It is unclear whether the entry of Epic was even a factor that led Microsoft to reduce its rate on game apps when it did. Even if Microsoft's rate reduction was due to increased competition from Epic, PC game app developers would not have been impacted by the increased competition for more than two years. If competition in mobile game apps is like competition in PC apps, as Dr. Sibley's comparison implies, many developers would not be impacted. For example, 32 months elapsed between the Epic Store's entry and Microsoft's rate reduction. If a new app store entered at the onset of the class period with a lower service fee rate and Google (and others) responded with rate reductions 32 months later, 38% of putative developer class members would not benefit from that entry because over those 32 months, those putative developer class members stopped posting sales.[287]

249. The service fee rates of Steam, the other primary PC game app distributor, do not support Dr. Sibley's opinion that increased competition would lead to lower rates for all developers. In November 2018 (prior to Epic's entry), Steam reduced its service fee rate from 30% to 25% for game apps with consumer spend of $10 million to $50 million and to 20% for game apps with consumer spend over $50 million.[288] It kept its service fee rate at 30% for game apps with consumer spend of less than $10 million and has continued to charge 30% for those game apps.[289]

250. Microsoft and Steam's reductions of fees for certain developers and not others contradict Dr. Sibley's claim that increased competition in the but-for world would lead to lower rates for all developers.[290] Those app stores' reductions are, instead, consistent with developers

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285 https://www.xbox.com/en-US/microsoft-store ("A Store that is twice as fast, easier to navigate, and safer for the whole family to find your next favorite games and entertainment on your Xbox."); https://www.microsoft.com/en-us/store/apps/windows

286 Booty, Matt, "Continuing Our PC Gaming Journey 2021 and Beyond," Xbox, April 29, 2021, https://news.xbox.com/en-us/2021/04/29/continuing-our-pc-gaming-journey-in-2021-and-beyond/ ("starting on August 1 the developer share of Microsoft Store PC games sales net revenue will increase to 88%, from 70%"); https://www.protocol.com/bulletins/microsoft-store-commission-cut. Microsoft announced its rate reduction in April 2021.

287 See Exhibit 43.

288 Steamworks Development, Steam Community, November 30, 2018, https://steamcommunity.com/groups/steamworks/announcements/detail/1697191267930157838, accessed November 8, 2021.

289 See Exhibit 28; https://steamcommunity.com/groups/steamworks/announcements/detail/1697191267930157838, accessed November 8, 2021.

290 Additionally, after ONE Store in Korea reduced its rates from 30% to 20% (and to 5% to developers that use their own payment processing), [redacted]

having varying importance to app stores and app store competition and consistent with my opinion that service fee rates may be lower in the but-for world for some, but not all, developers.

4. Dr. Sibley's Claim that Google Documents Support the Conclusion that All Developers Would Have a Lower Service Fee Is Not Accurate

251. Dr. Sibley's argument that Google's business documents indicate a 30% rate [redacted] does not imply that all developers would have lower rates in the but-for world.[291]

252. Many Google documents show that Google considered changes to the service fee rate that would have meant that some, but not all, developers' rates would have been lower. Google documents show it considered a strategy of [redacted][292] [redacted][294] That strategy implies variation in rates across developers with some developers' rates remaining at 30%.[295] [redacted][296]

5. Dr. Sibley's Claim that Google Would Not "Price Discriminate" and Set Different Service Fee Rates for Different Developers Is Inaccurate

253. Finally, Dr. Sibley's claim that Google would not "price discriminate" and charge developers different service fee rates because "a programmatic reduction of the 30% default rate would be most consistent with Google's economic incentives and conform to Google's historic pricing practices"[297] is not true.

[redacted] See, for example, GOOG-PLAY-000005203- 08; GOOG-PLAY-003332070-081. See also, Exhibit 28 and see this report's production; "One Store Introduction," One Store Corp., January 2020, https://dev.onestore.co.kr/devpoc/static-res/ files/ONEstoreIntro_dev_en.pdf, accessed November 8, 2021, at slide 9.

291 Sibley Report at ¶268.

292 See e.g., GOOG-PLAY-000444214.R; GOOG-PLAY-006990552 at 554; GOOG-PLAY-003335786.R at 808.R.

293 GOOG-PLAY-003331592.R.

294 GOOG-PLAY-003331592.R at 606.R; GOOG-PLAY-006990552 at 554.

295 GOOG-PLAY-000565001 (August 2019).

296 GOOG-PLAY-003331592.R .

297 Sibley Report at ¶270. Certain Google Play rate reductions could be considered "programmatic," in that they were targeted to certain types of developers. For example, [redacted] targeted certain types of

254. Google's "historic pricing practices" do not include a uniform reduction to all developers like the reduction claimed by Dr. Sibley (and Dr. Williams). Google's service fee reductions have been offered to certain developers (e.g., the [redacted]), developers with certain amounts of consumer spend (e.g., consumer spend of $1 million or less), or certain kinds of apps (e.g., apps with subscription IAPs).[298] [redacted][299]

255. Dr. Sibley has not provided any explanation or evidence that competition in the but-for world would have been different.

256. Dr. Sibley's claim about charging different prices to different developers or "price discrimination" is also contradicted by the facts. He states that this is rare and "normally done only for a small number of large customers, whose business is worth the substantial transaction costs required to price them both individually and profitably."[300] However, Google has provided lower rates to large customers whose businesses were apparently worth whatever transactions costs were required. In addition, over the class period, Google has continued to increase the number of developers to which it offers lower service fee rates. In 2017, [redacted] developers had obtained rates lower than 30%. In 2020, there were [redacted] developers that had obtained rates lower than 30%.[301]

257. Dr. Sibley's opinion that Google would have been unable to set different rates to different developers because doing so "requires a level of detailed knowledge about individual tastes that firms typically do not possess" does not consider recent developments in technology and in the economic literature.[302] Widespread use of computers and big data in the past twenty

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developers. Dr. Sibley's use of the terms "programmatic," in that sense would describe Google Play rate reductions but would not be consistent with his opinion that Google Play would reduce rates to *all* developers.

298 For example, in January 2018, Google reduced the subscription service fee to 15% for the second year of subscriptions. "Playtime 2017: Find success on Google Play and grow your business with new Play Console features," Android Developers Blog, October 19, 2017, https://android-developers.googleblog.com/2017/10/playtime-2017-find-success-on-google.html (under "Grow your subscriptions business" header). In September 2020, Google stated a policy "clarification" around a digital content exception. In March 2021, Google announced a 15% service fee on the developer's first $1 million, effective July 1, 2021. "Boosting developer success on Google Play," Android Developers Blog, March 16, 2021, https://android-developers.googleblog.com/2021/03/boosting-dev-success.html. In October 2021, Google announced a 15% service fees on subscriptions from the outset (i.e., including first year). "Evolving our business model to address developer needs," Android Developers Blog, October 21, 2021, https://android-developers.googleblog.com/2021/10/evolving-business-model.html.

299 See Deposition of Mike Marchak, January 12-13, 2022, ("Marchak Dep."), Vol. 1 at pp. 87-88, 309-310.

300 Sibley Report at ¶274.

301 See Exhibit 26.

302 Sibley Report at ¶274. Moreover, Dr. Sibley's opinion regarding "price discrimination" misunderstands the issue of classwide impact. The question of classwide impact is whether all developers

years has resulted in "price discrimination" not only being possible but used by many companies. Dynamic pricing, personalized pricing, and algorithmic price discrimination, all result in different prices to different customers, and are a commercial reality.[303] Moreover, Google Play has been able to charge different service fee rates to developers based on the length of time an individual consumer has subscribed to the developer's app, further undermining Dr. Sibley's opinion.

C. DEVELOPER PLAINTIFFS' EXPERT'S OPINION RELATED TO LOST PROFITS IS FLAWED BECAUSE IT IGNORES MANY INDIVIDUALIZED FACTORS

258. Determining whether a putative developer class member is impacted, and measuring its damages, should be based on a comparison of the developers' economic situation in the actual and but-for worlds.[304] In this case, a developer's economic situation cannot be limited to its service fee rate because determining and measuring any losses to the developer from the alleged conduct implicates more than the service fee rate. If, in the but-for world, the developer passed through some portion of lower service fees, then an analysis of the developers' revenues must be undertaken; similarly, if the developer incurred higher costs in the but-for world, then an analysis of those costs must be performed. These considerations mean that the developer's profits in the actual and but-for worlds must be compared.

259. Comparing profits in the actual and but-for worlds is more complicated than comparing service fee rates. Determining profits in the but-for world requires an analysis of the developer's revenues as well as its costs. Its revenues will be affected by the price elasticity of demand for the developer's apps. Its costs will depend on the characteristics of the apps, including, for example, the technical complexity of the developer's apps and the costs

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would get a lower rate – for that conclusion to fail it is not necessary that every developer gets a different rate.

303 Airlines, Uber, Amazon, and Staples have all used complex pricing methods. For dynamic pricing literature, see, for example, McAfee, R. Preston and Vera te Velde, "Dynamic Price Discrimination in the Airline Industry," *Handbook on Economics and Information Systems*, in T.J. Hendershott, *Handbook on Economics and Information Systems*, Vol. 1, Elsevier, 2006; Aguirregabiria, Victor, Allan Collard-Wexler, and Stephen P. Ryan, "Dynamic Games in Empirical Industrial Organization," in *Handbook of Industrial Organization*, Vol. 4, No. 1, 2021, pp. 225-343; "Big Data and Personalized Pricing," Council of Economic Advisors Report, 2015, https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/docs/Big_Data_Report_Nonembargo_v2.pdf and a non-technical overview here: https://obamawhitehouse.archives.gov/blog/2015/02/06/economics-big-data-and-differential-pricing. See also Shiller, Benjamin Reed, "First-Degree Price Discrimination Using Big Data," Working Paper No. 58, Brandeis University, Department of Economics and International Business School, 2014, https://www.brandeis.edu/economics/RePEc/brd/doc/Brandeis_WP58R2.pdf. For algorithmic price discrimination, see, for example, Bar-Gill, Oren, "Algorithmic Price Discrimination When Demand Is a Function of Both Preferences and (Mis)perceptions," *University of Chicago Law Review*, Vol. 86, No. 2, 2019, pp. 217-254.

304 See Williams Report at ¶15 citing Reference Guide on Estimation of Economic Damages ("Damages measurement then determines the plaintiff's hypothetical value in the but-for scenario. Economic damages are the difference between that [but-for] value and the actual value that the plaintiff achieved.")

associated with offering and updating the apps in different app stores, as well as other factors. Because of the variation across developers and the factors that affect developers' profits, determining impact and calculating damages based on a lost profits analysis requires individualized information and analysis.

260. While Dr. Williams apparently agrees that determination of impact and damages is based on a consideration of a plaintiff's economic situation in the actual world and the but-for world, he attempts to avoid the more complex and individualized analysis of putative developers' profits.[305] He claims that his calculated developer "overcharge" – that is, the difference between the actual and but-for service fees – understates all developers' lost profits.[306] Dr. Williams apparently concludes that analyzing whether developers lost profits in the but-for world is not necessary. However, Dr. Williams fails to consider several important factors that would affect a comparison of developer profits in the actual and but-for world.[307]

1. Developers' Prices in the But-For World Would Have Been Affected By Competition Across Developers

261. Dr. Williams' claim that analyzing developers' lost profits is not necessary because developers would not change retail prices in the but-for world does not consider economic realities.[308]

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[305] Williams Report at ¶¶15, 71.

[306] Williams Report at ¶71 ("If a developer were to reduce its app prices in response to lower service fees in the but-for world (i.e., pass through those lower fees to its customers), basic economics predicts that the developer likely would have sold more apps at the lower price and would have generated additional profits in doing so.").

[307] While Dr. Williams states that damage methodologies, generally and including his, should be based on a comparison of the plaintiff's position in the actual world and the but-for world, where only the effects of the alleged conduct are allowed to be different between those two worlds, he fails to recognize that principle is not a legitimate basis to ignore that in the but-for world some developers' costs would have been higher or that Google would change the way it monetizes Google Play. Williams Report at ¶¶70-71. That is, Developer Plaintiffs claim that absent the alleged conduct there would have been more app stores. If a developer's costs rise because the developer is now forced to serve more app stores, those costs must be considered as part of the but-for world. Similarly, if in the but-for world Google Play's revenues from a service fee assessed as a percentage of consumer spend declines substantially, and if it can change the way it collects revenue from the app store and (as is the case) has business documents that record and analyze those alternative ways to collect revenue, then not only does Google have the clear incentive to do so in the but-for world, but taking account of those changes is proper and necessary in an analysis of impact and damages.

[308] Dr. Williams states that a developer that passed through some (or all) of lower service fees would generate "additional" profits from doing so. Williams Report at ¶71. However, Dr. Williams' formula, set out in Appendix III, does not show that a developer would necessarily earn more profits if it passed through some portion of any lower service fees. The formula offered by Dr. Williams shows that lost profits are greater than or equal to some portion of the overcharge, not considering any change in sales due to lower prices. So, for example, if the pass-through rate is one (100% pass-through), Dr. Williams' formula states that the developer's lost profits are greater than *or equal to zero*, not that they are greater

262. Dr. Williams does not consider competition across developers or the way in which prices are set. A profit-maximizing developer that faces competition and sets prices to end in "99," for example, may not find a price reduction from one price point to another to be profit-maximizing and therefore would choose not to reduce its price when service fee rates fall.[309] However, if its rival does reduce prices, that app developer may lose profits due to competition. The "calculus" associated with such pricing actions and reactions on the part of developers is complicated, but without analyzing them, Dr. Williams' conclusion that developers' profits will always be higher in the but-for world is an assumption, not the result of any economic analysis.

2. Developers' Costs Would Have Been Different in the But-For World

263. Dr. Williams assumes that developers' costs are the same in the actual and but-for worlds.[310] Dr. Williams provides no basis for this assumption and the evidence shows that it would not be true for all developers. A lost profits analysis that addresses differences in cost between the actual and but-for worlds requires a detailed analysis of individual developers' costs and profits.

264. In Dr. Sibley's but-for world, some developers' costs would have been higher. Dr. Sibley claims that the alleged conduct includes certain contracts between Google and mobile device OEMs that relate to the fragmentation of the Android operating system.[311] Therefore, absent those allegedly anticompetitive contracts, there would be more stores in the but-for world, and those stores would have run on more incompatible versions of Android. Given the differences across variants of Android and app stores, a developer listing an app in multiple stores would have been forced to create different versions of the app (and different versions of each update) which implies higher distribution and development costs for some developers. For example, when Epic was developing Fortnite for Android, Epic had to invest engineering time and resources to determine whether Fortnite would operate on different versions of Android. [redacted][312]

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than or equal to the overcharge. Moreover, the formula does not consider any change in profits from a change in sales – that amount is explicitly set to zero in Dr. Williams' formulation, which according to Dr. Williams, is a conservative approach because he assumes a positive change in sales in the but-for world. This is a flawed assumption, because some apps may lose sales even if it sets a lower price, because of more intense price competition that may occur in the but-for world.

309 Exhibit 32 shows that [redacted] of app download and IAP prices end in "99."

310 See Williams Report Appendix III, ¶109 ("I assume that unit cost for developers is C and is fixed between actual and but-for worlds.").

311 See e.g., Sibley Report at ¶222 ("AFAs [Anti-Fragmentation Agreements] and ACCs [Android Compatibility Commitments] restrict OEMs' ability to manufacture and sell any device that uses a version of Android that is not approved by Google.").

312 See [redacted] More generally, developers may incur costs to distribute apps in different app stores. See also Koh Dep. at pp. 320-321 [redacted]

265. Developers' costs in the but-for world also may be higher for other reasons. There are costs associated with transacting with each app store, including, for example, the costs in understanding and complying with each app store's terms and conditions, updating an app in each store, and marketing the app in each store. As a developer offers an app in more stores, those costs can increase.[313]

266. Given that developers' costs could increase in the but-for world, determining whether a developer has lost profits as compared to profits in that but-for world must consider those costs. It cannot be assumed, as Dr. Williams has assumed, that costs are the same. Determining whether a developer's costs are higher, however, requires an individualized analysis of the developer's apps.

3. Google Play Benefits Would Have Been Different in the But-For World

267. Moreover, services and tools provided by Google Play in the actual world may not be available from all app stores in the but-for world or available on the same terms as Google Play provides them. [redacted][314] For example, not all app stores (or alternative payment processors) may provide the more costly forms of payment such as DCB[315] and gift cards, and [redacted][316]

268. Google Play makes numerous other services and tools available to developers. Whether each of those services are important to a developer and would have been available in the but-for world at the same cost as in the actual world requires a developer-specific analysis.[317]

4. Google Play's Service Fees Could Be Assessed Differently in the But-For World

269. Dr. Williams' opinion regarding lost profits also does not properly account for Google's actions in the but-for world.[318] That is, Dr. Williams' opinion does not allow for the

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313 See [redacted]

314 GOOG-PLAY-0110236932.

315 As described above, some putative developer class members rely on DCB sales. [redacted]

316 GOOG-PLAY-000337564 at -587; GOOG-PLAY-000565541 at -559.

317 Glick Dep. at p. 214.

318 Dr. Williams describes that in a damages analysis, a "characterization of the harmful event…will include a description of the defendant's proper actions in place of its unlawful actions and a statement

possibility that Google would change the way it monetizes Google Play in the but-for world even though, according to Developer Plaintiffs, Google would not earn any revenue from developers that used another billing system instead of Google Play Billing. Service fees generated from subscriptions and IAPs accounted for [redacted] of total Google Play revenue associated with "U.S." developers during the class period.[319] [redacted][320] Therefore, the way Google would respond must be considered in any determination of developer impact and calculation of developer damages. Calculating a developer's lost profits would require an individualized analysis of how an alternative monetization strategy would affect the developer.[321]

270. There are several ways Google could change Google Play's monetization to address the potential loss of revenues from developers that chose to use alternative payment processors in the but-for world. For example, Google could charge [redacted][322] For some developers, this [redacted] would mean higher costs. For example, [redacted][324] Total fees payable to Google Play would have been

about the economic situation absent the wrongdoing, with the defendant's proper actions replacing the unlawful ones (the but-for scenario)." See Williams Report at ¶15.

319 See Exhibit 4.

320 Feng Dep. at pp. 158-159 [redacted]

321 Developer Plaintiffs apparently contend that the only way that Google can respond to competition is through a reduction in the service fee rate. But Google has the ability and economic incentive to pursue other ways to respond to competition if those other strategies generate more revenue and profits than a reduction in the service fee rate. [redacted] See for example, GOOG-PLAY-000565001.R at 013 and 019 [redacted]

322 See GOOG-PLAY-006990552 and GOOG-PLAY-000565001.R. [redacted]

323 [redacted] See this report's production; https://support.google.com/googleplay/android-developer/answer/6112435 (describing a one-time $25 registration fee for developers on Google Play Store).

324 Peekya first published its app in December 2019. See this report's production.

higher for [redacted] of putative developer class members, depending on the year during the class period. Over the entire class period, about [redacted] of putative developer class members' fees would have been higher if Google charged [redacted] compared to the fees that they actually paid.[325] Contrary to Dr. Williams' assumption, those developers' costs would have been higher in the but-for world. Consequently, their profits would have been lower.

271. Similarly, if [redacted][326] Generally, developers that have many downloads, but relatively low consumer spend would have higher service fees in a world where [redacted] For example, as described above, the [redacted] has an app with over [redacted] downloads and about [redacted] in consumer spend. If Google Play charged [redacted] service fees would increase from about [redacted] (the actual service fees over the class period) to over [redacted][327] Contrary to Dr. Williams' opinion, [redacted] profits would not be higher in the but-for world.

272. Alternative Google Play monetization strategies would affect not only the service fees of developers, but also the kinds of services and tools available to developers. In the actual world, Google made investments in enabling subscription services, enabling different forms of payment, and others. In the but-for world, if Google was generating revenue in some other way, Google would likely refocus those investments towards services and products that are optimal for a but-for world monetization strategy. The proposed developer class members that rely on these tools and services may not get the same tools and services in the but-for world from Google. Whether they could have obtained the same tools at the same cost depends on the tools needed by the developer and their cost from other sources. For instance, developers that earn revenue from IAPs could have been worse off than developers that earn revenue from ads, for example, because Google could have invested more in tools for ads than tools for IAPs.[328]

VIII. CONSUMER PLAINTIFFS' EXPERT'S CLAIMS OF IMPACT ARE BASED ON FLAWED ECONOMIC REASONING AND DO NOT CONSIDER ACTUAL APP, SUBSCRIPTION, AND IAP PRICING

273. To show that any individual consumer was impacted by the alleged conduct, Dr. Singer, Consumer Plaintiffs' expert, must establish that (1) the developers from which the consumer purchased apps, subscriptions, or IAPs would have obtained lower service fee rates in the but-for world and (2) that as a result, the developers would have lowered their app,

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325 See Exhibit 11.

326 See Developer Complaint ¶ 210; GOOG-PLAY-000336574 at 588.

327 [redacted] See GOOG-PLAY-000336574 at 588; GOOG-PLAY-006990552 at 554, 565. See this report's production.

328 See Marchak Dep. Ex. 375 [redacted]

subscription and IAP prices. Unless both of those conditions occur, the consumer is not impacted. It follows that to show that all or nearly all consumers were impacted, Dr. Singer must establish that (1) all or nearly all developers would have obtained lower service fee rates in the but-for world and (2) those developers would have passed through those lower service fees in the form of lower retail prices to all or nearly all consumers.

274. Dr. Singer attempts to establish common impact by claiming that in the but-for world, competition from a single app store with a catalog of apps comparable to the catalog of Google Play would reduce Google Play's market share to 60% and that as a result, service fee rates for all paid apps would fall to 23.4% and service fee rates for all IAPs and subscriptions would fall to 14.8%.[329] Alternatively, he claims that if paid apps and IAPs are considered together, all service fee rates, on all transactions, would be 22.8%.[330] Dr. Singer reaches these results based on models that assume Google Play would set a certain service fee rate to maximize its profits on a portion of its sales. For example, Dr. Singer finds the but-for service fee rate of 23.4% based on a model that assumes Google maximizes profits on paid downloads. The model is constructed to return a single but-for service fee rate, as are his other models. All his models depend on average or aggregated inputs. Dr. Singer makes no attempt to study or test whether, in the but-for world, different developers would have been affected differently, and his models are not capable of explaining why some developers in the actual world get lower rates.

275. Dr. Singer further claims that nearly all developers would pass through nearly 100% of all service fee rate reductions to consumers. He finds that on average, 89.9% of the service fee reductions would have been passed through to consumers in the form of lower retail app and IAP prices.[331]

276. Dr. Singer's calculations of but-for service fee rates depend on his estimates of pass-through rates. If Dr. Singer's pass-through rates are wrong, then the but-for service fee rates that depend on the pass-through rates are also wrong. Of course, in addition, if the pass-through rates are wrong, even if there were service fee rate reductions, there would be no evidence that those reductions would have been passed through to consumers. Given the importance of Dr. Singer's pass-through rates, I begin with that topic in Section VIII.D. Discussion of the but-for service fee rate calculations are discussed in Section VIII.E.

D. CONSUMER PLAINTIFFS' EXPERT'S OPINION REGARDING PASS-THROUGH IS FLAWED AND INACCURATE

277. Dr. Singer's conclusion of "widespread pass-through" is based on a formulation of pass-through rates that depend solely on developers' shares of unit sales within a "category."[332]

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329 See Singer Report Tables 3, 5, ¶177.

330 Singer Report Appendix 4.

331 See Singer Report Table 8, ¶33. Dr. Singer also claims that in the but-for world Google could expand its Play Points program rather than reduce service fees. That opinion is discussed in Section IX below.

332 Singer Report at ¶239 ("The logit demand system yields a pass-through rate equal to $[M-Q_j]/M$, where M is the size of the market – inclusive of the outside good – and Q_j is the quantity sold of a given product.").

The method is overly simplistic, depends on unsupported assumptions, and includes no analysis of any service fee rate change or any cost change at all. Moreover, the method produces false results – that is, the method predicts pass-through rates of near 100% for many prices that did not change at all when the service fee rate changed.

278. Below, I first describe Dr. Singer's formula for finding pass-through rates and then show that the predicted pass-through rates based on the formula are contradicted by the empirical evidence in this case.

1. Dr. Singer's Pass-Through Methodology is Based on an Overly Simplistic Formula That Produces Inaccurate Results

279. Every pass-through rate calculated by Dr. Singer is calculated with a formula that depends solely on the share of a developer's sales within a "category." The "categories" used by Dr. Singer, which are integral to the results, are not based on any economic analysis or reasoning but are simply the categories used in Google Play. The method is unrealistic and produces pass-through rates that are demonstrably wrong.

280. An example demonstrates that Dr. Singer's method is based on overly simplistic and unrealistic assumptions. Dr. Singer finds that the pass-through rate for the developer [redacted] for subscription transactions in January 2019 is nearly 100%.[333] To find this pass-through rate, Dr. Singer calculated the ratio of [redacted] unit sales of its subscriptions transactions in that month – [redacted] – and the total number of subscription transactions in the "Game" category in that month – [redacted]. This ratio is [redacted] share of transactions (or unit sales) in that month in that category, which is 0.0002%.[334] According to Dr. Singer's method, the pass-through rate for [redacted] subscription transactions in that month is calculated as one minus the share, which is 99.9998%.[335] Dr. Singer performed similar calculations for other months and found [redacted] had a pass-through rate of 99.98% to 99.9999% throughout the class period.[336]

281. Dr. Singer's pass-through results are demonstrably wrong. Some developers, including [redacted] experienced service fee rate reductions in the real world, so data are available to test whether developers passed through service fee rate reductions consistent with Dr. Singer's predictions.

282. [redacted] service fee rate in Google Play fell from 30% to 15% in January 2018.[337] [redacted] service fee rates and its subscription prices are shown in Figure 10 below. The

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333 [redacted]

334 That is, 2/935,919 = 0.0002%

335 See Exhibit 44.

336 See Exhibit 45.

337 This rate reduction was pursuant to Google Play's policy change in 2018 for subscriptions for consumers that were more than one-year in length. When Google initiated the program and throughout the period [redacted] sold subscriptions in its [redacted], its consumer subscriptions apparently are annual renewals. Thus, its service fee rate dropped from 30% to 15% immediately after Google made the

graph shows that [redacted] did not change its retail price after its service fee rate reduction – its pass-through rate was zero. Dr. Singer finds the pass-through rate was nearly 100%. [redacted] did not pass on any of its service fee rate reduction, much less pass through nearly 100% of the reduction, as Dr. Singer's pass-through method predicts.[338]

283. Dr. Singer uses the same method to find pass-through rates for each developer in each app category and each month and for each of the three types of transactions – paid downloads, subscriptions, and IAPs. Each pass-through rate is calculated the same way – one minus the developer's share of unit sales in the category. The pass-through rates he reports for categories of apps[339] are weighted averages of these share-based pass-through rates.[340]

284. Across all developers, transaction types and months, 95% of pass-through rates calculated by Dr. Singer are over 99.5%.[341] Given that Dr. Singer's pass-through rates are

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service fee rate reduction and continued to be 15% throughout the time it sold subscriptions. See this report's production.

338 Dr. Williams also found that [redacted] prices did not change after a service fee rate reduction. See Dr. Williams' backup for Williams Report Figure 3.

339 Singer Report Table 8.

340 The weights used in the category-weighted average are based on units sold. So, for example, for a category, there may be thousands of different pass-through rates calculated since Dr. Singer calculates a pass-through rate for three types of transactions, many months, and many developers. Each of those pass-through rates is weighted by its share of total units sold in the category, for each type of transaction in the month to find the category-weighted average pass-through rate.

341 See Exhibit 47.

determined solely with shares and that in his (overly broad) categories, there can be hundreds or even thousands of different apps and developers,[342] it is not surprising that many shares are very small and, consequently, when a pass-through rate is calculated as one minus the share, the resulting pass-through rates are very close to 100%.

285. The only way that Dr. Singer would conclude that some consumer was not impacted – because some amount of a service fee rate reduction was not passed through to the consumer – is if the consumer solely made purchases from developers that had 100% shares of their respective category sales.

2. Pricing Data Show that Dr. Singer's Predicted Pass-Through Rates Are Wrong

286. Dr. Singer's mistaken claim about [redacted] pass-through rate, described above, is not an isolated example. There are other examples of developers that Dr. Singer claims have pass-through rates of nearly 100% but in fact have had service fee rate reductions and have not passed through any part of the reduction in lower service fee rate reductions.[343]

287. Similar to [redacted], two other putative developer class members, [redacted] and [redacted] had service fee rate reductions from 30% to 15% in January 2018. As shown in Figures 11 and 12 below, these developers' retail prices remained constant after the service fee rate reduction, indicating a zero pass-through rate. Yet, Dr. Singer finds nearly 100% pass-through rates for both [redacted] and [redacted] for most months of the class period. Dr. Singer's pass-through rate formula produces inaccurate results for paid downloads and IAPs, as well.[344]

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342 In the Games category used by Dr. Singer, there are [redacted] See this report's production.

343 Dr. Singer's pass-through rates are also contradicted by testimony. He found a pass-through rate of nearly 100% for the [redacted]. But according to [redacted], when it experienced a lower service fee rate, [redacted]

344 Most SKU prices did not change following a service fee rate reduction. See Figure 13 and Exhibit 52. These SKUs include not only subscriptions but also paid downloads and IAPs, such as the paid download app [redacted] (app package name [redacted] and IAPs in [redacted] (app package name [redacted]). That is, [redacted] and [redacted] demonstrate zero pass-through even though Dr. Singer's method predicts a pass-through rate ranging from 99.98% to 99.996% for the former and 99.8% to 99.99% for the latter. See this report's production. Additional examples of prices that do not change after a service fee rate reduction are shown in Exhibits 63 and 64. Exhibit 63 shows the price and service fee rate for a subscription SKU, [redacted] The service fee rate for that SKU fell from 30% to 15% between July and September 2017, but the price remained constant from December 2016 through July 2021 – indicating no pass-through of the service fee rate reduction. Dr. Singer predicts pass-through rates applicable to this SKU that range from 81% to 100% (varying across months), based on his "one-minus-the-share" formula. Exhibit 64 shows the price and service fee rate for the [redacted] subscription SKU. The service fee for this SKU fell from 30% to 15% over the period December 2017 to December 2018; but the price of the SKU remained constant – indicating no pass-

through of the service fee rate reduction. Dr. Singer predicts pass-through rates applicable to this SKU that range from 71% to 94% (varying across months), based on his "one-minus-the-share" formula.

288. Broadly considered comparisons of retail app, subscription, and IAP prices before and after service fee rate reductions indicate that only some rate reductions are passed through. These comparisons also show that Dr. Singer's method and pass-through results are not reliable and that his claim of "widespread" pass-through is not true.[345]

289. Figure 13 below summarizes comparisons of retail app and IAP prices before and after service fee rate changes and compares those results to Dr. Singer's pass-through rates based on his "one-minus-the-share" formula. The figure shows percentages of positive pass-through rates found by Dr. Singer, Dr. Williams, and me.

290. Dr. Singer predicts a pass-through rate for an individual developer-transaction type-app category-month based on his "one-minus-the-share" formula.

291. Dr. Williams compared prices of "SKUs" (e.g., prices of individual apps or IAPs)[346] that, based on Google's transaction data, had service fee rate changes from 30% to 15%. Dr. Williams compared the average price in all consecutive months in which the service fee rate was 30% and the average price in all consecutive months in which the service fee rate was 15%.[347] Dr. Williams made such comparisons for subscriptions, IAPs, and paid downloads.

345 Singer Report Section V.D.3.

346 SKU here refers to the "product ID" in Google's transaction data.

347 Williams fn. 119.

He found that for 23% of the paid downloads, 4% of the subscriptions, and 10% of the IAPs, prices fell after the service fee rate (that is, pass-through rates were positive).[348]

292. I compared prices of SKUs before and after the SKU had a service fee rate change. I analyzed SKU prices with the transactions data,[349] the app-level data, data that I collected once each month from Google Play between April 2021 and January 2022 ("scraped data"), and data requested by me from Google showing prices on June 21, 2021, October 16, 2021, and February 6, 2022 ("snapshot data"). I analyzed app prices, subscription prices, and IAP prices before and after those SKUs had a service fee rate change.

293. With Google's transaction data, I compared subscription prices one month before and one month after a service fee rate change as well as six months before and six months after the rate change.[350] I also separately examined subscription prices for developers in Google's [redacted][351]

- The app-level data extends through 2021 and therefore allowed me to consider price changes after, in July 2021, Google reduced the service fee rate for developers' first $1 million of consumer spend. With the app-level data, I compared prices of paid downloads one month before and one month after their service fee rate changed. I limit my analysis of the app-level data to paid downloads, because that data aggregates subscriptions and aggregates IAPs and thus could show changes in the average price due to changes in product mix. That problem does not exist for paid downloads. I analyzed paid app downloads that, according to the app-level data, experienced a service fee rate change in or after July 2021.
- The scraped data included prices of paid downloads only.[352] With the scraped data, I compared prices of paid downloads one month before and one month after their service fee rate changed. I identified paid downloads with service fee rate changes on or after July 2021 based on the app-level data.
- With the snapshot data, I compared prices of IAPs on June 21, 2021 (prior to Google Play's July 2021 rate change) to prices on October 16, 2021 and February 6, 2022 (after Google Play's July 2021 rate change). I included only IAPs that, according to the app-level data, experienced a service fee rate change on or after July 2021.

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348 Overall, these percentages indicate about [redacted] of the SKUs' prices fell after the service fee rate was reduced. The percentage is consistent with Dr. Williams' Figure 3. Dr. Williams' analysis of paid download and non-subscription IAP SKUs relied on comparisons of prices before and after the July 2021 Google service fee rate change. Dr. Williams relied on the transactions data for these comparisons, which means he had only three days in July 2021 after the service fee rate change. App-level data was available for the full year of 2021 and could have been used for comparisons.

349 Dr. Williams used the same transactions data that I used.

350 See Exhibit 50.

351 See Exhibit 8 for a list of the developers associated with these programs.

352 The paid download prices were the only prices that could be collected through the mechanical process that used to create the scraped dataset.

294. Figure 13 below summarizes the overall pass-through rate results from Dr. Singer, Dr. Williams, and from the analysis I conducted. The figure shows that while Dr. Singer's "one-minus-the-share" formula predicts that nearly all developers would pass through service fee rate changes, in fact, very few developers reduced prices when their service fee rates actually fell.[353]

295. The price comparisons before and after a service fee rate change summarized in Figure 13 – based on the comparisons I conducted and those provided in Dr. Williams' report – provide information about actual pricing decisions made by developers. Those results contradict Dr. Singer's formula-based conclusion of "widespread pass-through" and demonstrate that the method he used to calculate pass-through rates is not reliable. The results show that Dr. Singer's predicted pass-through rates nearly always show nearly complete pass-through, but when the pricing data are examined, those predicted pass-through rates are shown to be wrong and, in many cases, prices do not change when service fee rates change.

296. Moreover, Dr. Singer had data to test the reliability of his method and his results, but he failed to do so. He has no analysis in his report that attempts to discover how any developer (or set of developers) responded to any change in a service fee rate or to any change in any type of cost in the real world – even though there are examples of service fee rate reductions in the past that were available for him to analyze in the Google transactions data.[354] Instead,

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353 Exhibit 52 shows these results in more detail.

354 As described below, Developer Plaintiffs' expert Dr. Williams analyzed certain service fee rate reductions. See Williams Report at ¶¶76-88.

he relied on a formula that produced results that conflict with the actual pricing behavior of developers.

297. Dr. Singer's results could also have been tested by comparing prices of apps, subscriptions, or IAPs that are available in Google Play (with a fee to Google Play) with prices on developers' websites (with no fee to Google Play). Dr. Singer claims that such comparisons yield "implied pass-through rates."[355] In some instances, prices on Google Play are the same as on developers' websites. According to Dr. Singer's implied pass-through rates, this would indicate zero pass-through. However, Dr. Singer's formula-based method predicts dramatically different pass-through rates. Table 8 provides examples of the implied pass-through rates, based on a comparison of the price in Google Play versus the price on the developer's website and Dr. Singer's predicted pass-through rates based on his "one-minus-the-share" formula. The table shows [redacted] an outdoor app offering a Pro subscription plan at [redacted] per year both in Google Play and on its website – which means its implied pass-through rate is zero. However, Dr. Singer's predicted pass-through rate is [redacted]

[redacted]

3. Dr. Singer's Pass-Through Method and Formula Are Not Consistent with Economics

298. Dr. Singer's pass-through rate formula is not consistent with economics. According to Dr. Singer's formula, pass-through depends solely on a developer's "share," implying that the pass-through rate for two apps (or developers) are the same simply because they had the same share of their category's sales – regardless of any other differences between them. There are economic studies, both theoretical and empirical, that show pass-through depends on numerous factors, including supply conditions (e.g., cost), demand and the curvature of demand, and competitive conditions.[356] Dr. Singer's pass-through rates do not consider any of those factors.

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355 Singer Report at ¶243, Table 9.

356 For a survey of the literature see "Cost pass-through: theory, measurement, and potential policy implications, A report prepared for the Office of Fair Trading," RBB Economics, February 2014.

299. Dr. Singer's "one-minus-the share" formula is not consistent with his own description of the economics of pass-through. According to Dr. Singer, a change in Google Play's service fee rate is "mathematically equivalent" to a developer's increase in marginal cost.[357] To support this opinion, Dr. Singer presents (another) formula that shows the relationship between a developer's marginal cost that includes the effect of a service fee rate ("C*"), the developers' "other" marginal costs ("C"), and the service fee rate ("t"). This relationship is derived by Dr. Singer from an assumption that a developer will set prices to maximize profits. He presents the formula as:[358]

$$C^* = C/(1-t)$$

300. According to the formula (and Dr. Singer), if the service fee rate is 30%, the developer's marginal costs, including the service fee will be equal to 1.43 times the developer's other marginal costs.[359] Similarly, if the service fee rate is 15%, the developer's marginal cost including service fees will be equal to 1.18 times the other marginal costs.

301. Dr. Singer concludes that if a developer sets prices to maximize profits (which implicates marginal cost in price-setting), and if the service fee rate in the but-for world is lower, prices in the but-for world will be lower. Dr. Singer's opinion is thus: (i) a service fee can be considered a marginal cost such that a lower service fee implies lower marginal cost, (ii) when marginal cost changes, price changes – which shows pass-through or a service fee rate change.[360]

302. However, Dr. Singer's opinion as described above contradicts his "one-minus-the-share" pass-through rate formula and his predicted pass-through rates.

303. First, Dr. Singer's opinion described above establishes that a pass-through rate for a service fee rate change depends on more than a developer's share. Dr. Singer's formulation indicates that the pass-through rate should consider the developer's marginal cost – and importantly, should consider the developer's marginal costs *besides the service fee*. To understand this, consider a developer that has an app with no marginal costs of distribution – that is, once the app is created and offered to consumers, the app can be downloaded and used by consumers without further cost. In Dr. Singer's formula described above, this would mean C=0. If the service fee rate is 30%, the developer's total marginal costs (according to Dr. Singer's formula) will be 1.43 times zero – or zero. If the service fee rate is 15% (again, using the same formula), total marginal costs including the service fee will be 1.18 times zero – or zero. In fact, if the developer's "other" marginal costs are zero, for any change in the service fee rate, total marginal costs including the service fee will be zero. Using Dr. Singer's logic, if the "other" marginal costs are zero, a change in the service fee rate will not

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357 Singer Report at ¶225.

358 Singer Report at ¶225.

359 This is found by using 0.30 in the formula for "t," and 1.0 in the formula for C.

360 It should be noted that the entire chain of logic assumes that the developer sets prices to maximize profits and there is no "stickiness" in price changes, due to, for example developers setting prices to end in "99." As described above, these are assumptions that are not true for all developers and determining whether the assumptions are true would require investigation into the strategies of individual developers.

produce a marginal cost change, and therefore there is no reason to change price. Pass-through is zero. This result is consistent with my discussion above in Section VI.B that describes reasons we would expect no pass-through for apps that have zero marginal cost. These economic principles are reflected in economic literature recognizing that changing tax rates on profits do not affect the volume of output or prices. To the extent that Consumer Plaintiffs are suggesting that service fees calculated as a percentage of prices (an ad valorem fee) operate like taxes, if a developer has no marginal costs, reducing the service fee will function like a reduction in tax on profit, which the literature recognizes will not affect prices.[361]

304. Dr. Singer's claim about the "mathematical equivalence" of a service fee rate and marginal cost also establishes that his "one-minus-the share" formula is not accurate. The "one-minus-the share" formula does not consider marginal cost – it depends solely on a developer's share. Dr. Singer's "one-minus-the-share" formula is wrong and is inconsistent with Dr. Singer's opinions about marginal cost.[362] For a developer with a small share (like many, according to Dr. Singer's analysis) and a zero marginal cost, the "one-minus-the-share" formula returns a pass-through rate close to 100%. However, under Dr. Singer's formulation of the service fee rate as a marginal cost, this developer's pass-through rate would be 0%.

305. Dr. Singer's attempt to argue that a service fee rate change is "mathematically equivalent" to a change in marginal cost exposes the fact that pass-through depends on

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[361] That is, when costs are zero, a tax applied as a percentage of profits is the same as the service fee rate applied to a developer's revenues (or price). In that case, changing the tax rate does not affect the price. See e.g., Goode, Richard, "The Corporate Income Tax and the Price Level," *American Economic Review*, Vol. 35, No. 1, 1945, pp. 40-58 at p. 43 ("From this it follows that, in so far as producers are guided by rational considerations, a tax on net profits, at any rate less than 100 per cent, will not directly affect the volume of output. A tax on profits is not itself a cost of production in any usual sense, nor does it directly influence costs. The tax will reduce the amount which a firm can retain out of the profits added by successive increments of output; nevertheless, any unit which adds to profits before taxes will also contribute something to profits after taxes. The last unit produced by each firm, its marginal unit, will add nothing to profits and nothing to taxes. Thus it will be advantageous for a firm to push production just as far with the tax as it would be if there were no tax. No firm will find the tax it pays a reason for changing its output. Hence the schedule showing the total supply which would be placed on the market by all firms in response to various prices will remain unchanged. So long as demand continues as before, market price will not be altered."). Moreover, Dr. Singer's claim that "Google's take rate is economically analogous to a tax on developers" and the materials he relies on to support that claim do not consider the case of marginal cost being equal to zero. See Singer at ¶244, fn. 531. See also Foros, Ø., Kind, H.J. and Wyndham, T., "Tax-Free Digital News?" *International Journal of Industrial Organization*, 66, 2019, pp.119-136, Kind, H.J. and Koethenbuerger, M., "Taxation in Digital Media Markets," *Journal of Public Economic Theory*, 2018, 20(1), pp.22-39, Sand-Zantman, W., "Taxation in the Digital Economy," 2018m Working Paper for the Institut d'Economie Industrielle.

[362] Had Dr. Singer considered that (as he did in ¶225 of his report), he would have found a different pass-through rate formula that depends on a developer's marginal cost. That is, to determine a pass-through rate, the developer's marginal cost (whatever its amount) should be considered. Dr. Singer's "one-minus-the share" formula does not. Dr. Singer's failure to consider marginal cost in determining pass-through rates is a fundamental problem with his method for all developers, not just those with zero marginal cost.

marginal cost. Of course, had Dr. Singer utilized a formula that includes a developer's marginal cost, determining a pass-through rate would depend on measuring the developer's marginal cost, which is a highly individualized analysis. Additionally, even that formula depends on certain assumptions that may or may not hold for all developers, including for example that they set prices to maximize profits and that their price-setting does not involve prices that end in "99."

4. The Basis For Dr. Singer's Pass-Through Formula is Fundamentally Flawed

306. Dr. Singer's basis for his "one-minus-the-share" formula is an overly simplified version of a highly restrictive demand system which, for the purposes here, produces unrealistic results. Dr. Singer's method uses "one minus the share" as the pass-through formula because, according to him, app demand can be described by a particular type of demand system – a simplified version of a "logit demand system" – and a pass-through rate in such a simplified logit demand system is equal to one minus the share.[363] The "logit" demand model, while frequently used in economics for its relative simplicity, is not appropriate for determining pass-through rates for apps because the model imposes restrictions that are not realistic for an app demand system.

307. There are thousands of apps and there can be thousands of apps even in a single category. Apps are highly differentiated from one another.[364] Because demand for any app depends on its characteristics, as well as the characteristics and prices of related apps, and characteristics of consumers, specifying a reliable demand model would require estimating many thousands of elasticities. Despite these complexities, Dr. Singer chose a relatively simple demand system – the logit system. The restrictions imposed by that relatively simple system when

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[363] Singer Report at ¶236. Dr. Singer uses regression analysis to estimate a logit demand system for apps. The regression is overly simplified in that there is no explicit consideration of app characteristics or consumers attributes or the interaction of the two, for example. Instead, Dr. Singer simply included "fixed effects unique to a given App and purchase type." Singer Report at ¶236. He claims that he has validated the use of his logit demand system, and by extension, the pass-through rate formula by observing for nearly all app categories, "a statistically significant relationship between demand and price" and so, concludes that the regression model is consistent with "economic expectations." (Singer Report at ¶237). He then uses the "one-minus-the-share" formula for pass-through derived from the logit model of demand for all pass-through rates. Singer Report at ¶239. To be clear, Dr. Singer's pass-through rates are not calculated with any of the regression "output." All pass-through rates depend only on the share of unit sales within a category. His formulas do not include any own-price elasticity of demand for any app or any cross-price elasticity of demand for any app generated from Dr. Singer's logit demand regressions. Moreover, Dr. Singer's observation that the price coefficients in the logit regressions are negative is not sufficient to infer that the results are "consistent with economic expectations" and that the formula for pass-through based on the logit model is a proper way to determine pass-through. For example, the logit model of demand used by Dr. Singer assumes that all products within a category are substitutes and that cross-price elasticities (e.g., the magnitude of substitution) depend on the products' shares, so that the best substitute for all products in a category is the product with the highest share. If those assumptions do not hold, then the logit model and the logit model's pass-through rate formula would not apply. See, for example, Train, Kenneth E., "Logit," in *Discrete Choice Methods with Simulation*, Cambridge University Press, 2009, pp. 34-75.

[364] See Section IV.A .

applied to this case produce results that conflict with common sense (such that a pass-through rate can be determined solely with the share of the app's unit sales).[365]

308. One of the underlying assumptions of Dr. Singer's demand model and pass-through rates is that all products within a Google Play category are substitutes. There is no economic basis for this assumption and the assumption does not reflect realistic substitution patterns across apps. It is clearly not true for all apps within the categories used by Dr. Singer.[366] For example, his model requires that all apps within the category "Games" are substitutes. But the "Games" category combines games for toddlers such as "Thomas and Friends" (described as a "fun, safe & interactive game play for children aged 2-7"),[367] the action game "Doom" (described as "Violence, Blood and Gore" for ages 17+),[368] Zynga's card game "Poker – Texas Hold'em,"[369] and home design game "Redecor."[370] Dr. Singer's category of Games clearly does not satisfy the underlying assumption of the logit model.

309. The arbitrary nature of Dr. Singer's categories affects the pass-through rates because the pass-through rate formula (flawed as it is) depends on the definition of the categories. If the categories are wrong, the pass-through rates are wrong because the formula depends on the categories.[371]

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365 See Berry, Steven T. and Phillip A. Haile, "Foundations of Demand Estimation," in *Handbook of Industrial Organization*, Vol. 4, No. 1, Elsevier, 2021, pp. 1-62 ("Although demand presents challenges that are absent in many empirical settings, all the "usual" challenges remain. One such challenge is finding empirical specifications that are both (a) sufficiently flexible to avoid strong a priori restrictions on the results and (b) sufficiently parsimonious to permit practical application. In some markets the number of closely related goods can be large; consider, for example, the set of all new automobile models, all computer models, all mutual funds, or all residential neighborhoods in a given city. Because the demand for a given good depends on the characteristics and prices of related goods, a demand system with J goods has J2 price elasticities at each point. In many contexts, this will rule out even a linear specification of the demand equation. Thus, even in cases where nonparametric estimation would be possible in principle, in practice it will often be necessary to impose restrictions in order to obtain an empirical model that is practical for the data available. Unsurprisingly, one can go too far in the pursuit of parsimony. Some of the simplest demand specifications (e.g., the CES, multinomial logit, multinomial probit) impose strong a priori restrictions on demand elasticities, and, therefore, on markups, pass-through, and other key quantities of interest that are at odds with common sense and standard economic models." Emphasis added).

366 Singer Report Table 8. The only apparent basis for Dr. Singer's use of the categories is that they are used by Google "to track user purchase activity." Singer Report at ¶34.

367 https://play.google.com/store/apps/details?id=com.budgestudios.googleplay.ThomasAndFriendsMagicalTracks

368 https://play.google.com/store/apps/details?id=com.bethsoft.DOOM

369 https://play.google.com/store/apps/details?id=com.zynga.livepoker

370 https://play.google.com/store/apps/details?id=fi.reworks.redecor

371 App categories are chosen by developers. See e.g., https://www.storemaven.com/academy/how-to-choose-an-app-category/ ("The category you choose needs to be relevant to your app, of course. But it

310. This problem can be illustrated by showing that pass-through rates change when the category definitions change. In Google Play, there are 17 sub-categories within the Games category and assigning apps to different sub-categories would lead to different results in Dr. Singer's model.[372] For example, [redacted] belongs to the Adventure Game subcategory. Dr. Singer's formula finds an average pass-through rate of [redacted] for [redacted] (across all purchase types and months) because [redacted] share of the Game category is 2%. [redacted] share of the Adventure Game subcategory is [redacted] and so Dr. Singer's formula would find an average pass-through rate of [redacted] Similarly, Dr. Singer finds that the pass-through rate for [redacted] is 57% because its share of all Games is [redacted]. [redacted] belongs to the Casual Game subcategory. Its share of Casual Games is 74% and so would have a [redacted] pass-through rate based on its share of its subcategory.[373] Dr. Singer's results are based on arbitrary category assignments, and his results change dramatically if different category assignments are used.

311. Even if Dr. Singer's "one-minus-the-share" formula could find reliable pass-through rates (which it cannot), the diversity among apps and complex substitution patterns means that identifying more appropriate categories would require analysis of many apps and would likely find more narrowly defined categories than those used by Dr. Singer. Such an analysis would be required to ensure that substitutes are properly grouped together.[374] As categories narrow, pass-through rates calculated based on Dr. Singer's method would decline. This follows from the formula itself. For example, say an app has a 1% share of the Games category. Dr. Singer's formula produces a pass-through rate of 99%. But if that app is relatively unique and has only a single other app that is a close substitute, and if each of those apps have a 50% share of its "category," the pass-through rate (based on Dr. Singer's formula) would decline to 50%. If the app was substantially more successful than its close

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should also enable your app to rank well in category charts. Users often discover new apps to download by perusing the charts. This means that high-ranking apps generally receive a lot of traffic and are able to generate more organic downloads...The category you choose for your app can affect its discoverability and conversion rates in both the Apple App and Google Play stores. The trick to choosing the right category for your unique app is balancing relevance with your competition."); see also https://support.google.com/googleplay/android-developer/answer/9859673 ("You can choose a category and add tags to your app or game in Play Console. Categories and tags help users to search for and discover the most relevant apps in the Play Store.").

372 See Exhibit 3 for a list of the sub-categories within Games. Sub-categories are for example, Action Games, Card Games, and Sports Games, as well as others. Even within a sub-category, apps can be quite differentiated. For example, two Adventure Games are Stormfall: Saga of Survival, which describes itself as "survive, explore, and master crafting and sorcery in this free-to-play survival MMORPG set in the high-fantasy Stormfall world," and Sonic-Forces: Running Battle, which describes itself as "Sonic the Hedgehog is back and running in this fast and cool multiplayer racing & battle game." https://play.google.com/store/apps/details?id=com.pacific.wildlands; https://play.google.com/store/apps/details?id=com.sega.sprint.

373 See Exhibit 54.

374 Determining how one should allow for demand substitution to "outside products" (that is, in this context, outside of the category) is important, can affect results, and requires analysis. See e.g., Sheu, Gloria and Charles Taragin, "Calibrating the AIDS and Multinomial Logit Models with Observed Margins," U.S. Department of Justice, Economic Analysis Group Discussion Paper, 2012.

rival, and its share of the "category" grew to 99%, the pass-through rate (based on Dr. Singer's formula) would decline to 1%. As the example demonstrates, the formula depends critically on finding the "right categories," but the only way to find such categories would be to investigate each app and to determine its close substitutes. That involves a highly complicated and individualized analysis.[375] Dr. Singer has performed no such analysis – instead, even though the most critical part of the formula is the definition of the categories, he performed no analysis at all and simply used the categories in Google Play, even though those categories have little to do with the relevant substitution patterns across apps.

312. Dr. Singer's use of an average pass-through rate for each category, and his overall pass-through rate for all categories mask the variation in pass-through rates – even using Dr. Singer's arbitrary method. For example, he reports a pass-through rate for the category of "Games" is 92.3%.[376] But weighted average pass-through rates, like those reported by Dr. Singer, for sub-categories of Games show that pass-through rates vary across sub-categories. For example, the average pass-through rate for Casual Games would be 52% and for Trivia Games it would be 58%, both much lower than the 92.3% pass-through rate Dr. Singer calculates for "Games" as a single category.[377] Of course, these sub-categories similarly mask variation. Dr. Singer's overall pass-through rate, which he uses as an input into his but-for service fee models, is a weighted average of all pass-through rates, for all sub-categories and all categories.

5. Dr. Singer's Predicted Pass-Through Rates Are Based on Assumptions that Are Not Reliable

313. The pass-through rates found by Dr. Singer do not reflect the reality that many developers use a pricing strategy to set prices that end in "99." As described above, developers use such price points to influence consumers' perceptions of price and thus affect sales.[378] When supply or demand conditions change, developers may not respond to those changes because they do not want to change their price to the next price that ends in "99."

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375 Dr. Singer's pass-through rates are calculated at the app developer GAIA ID, app category (pooling all games to one category), and purchase type level in each month, but the logic still applies at the app level. Such an analysis is further complicated by the fact that some of the apps at issue in this case have substitution relationships with free apps, which are pooled into the "outside products" category by Dr. Singer but ignored in his pass-through rate calculation. To determine "true" substitution relationships free apps must be considered. Moreover, any econometric model designed to identify substitution relationships (and thus identify reliable categories) must contend with the fact that developers frequently set prices that end in "99," and infrequently change prices. That feature of this marketplace will require more careful analysis for the estimation of demand relationships and determining any reliable categories.

376 Singer Report Table 8.

377 See Exhibit 55; Singer Report Table 8.

378 See, for example, Stiving, Mark and Russell S. Winer, "An Empirical Analysis of Price Endings with Scanner Data," *Journal of Consumer Research*, Vol. 24, No. 1, 1997, pp. 57-67 at 57 ("Managers apparently set prices in a manner consistent with the premise that the last digit of a price has a significant impact on sales. Several surveys on what price endings managers actually use have been conducted, and all of these surveys support the premise that firms set prices to appear that they are just below a round number.") See also Schindler, Robert M. and Patrick N. Kirby, "Patterns of Rightmost Digits Used in

314. Dr. Singer's calculations do not consider this marketplace reality and instead imply that developers would change prices – penny by penny – in response to service fee rate changes. In fact, Dr. Singer's pass-through rates imply that nearly all developers that use this strategy would abandon it in the but-for world. For example, the developer [redacted] subscription price in the actual world was [redacted] as of June 2017.[379] Dr. Singer's method predicts that if [redacted] service fee rate fell from 30% to [redacted] in June 2017 and had a pass-through rate of [redacted] as he claims), [redacted] would change its price to [redacted] and change its pricing strategy.[380]

315. Table 9 below shows that Dr. Singer's calculations imply that among the over [redacted] developers that use focal point pricing, nearly all of them would abandon that strategy for at least one of their paid apps, subscriptions, or IAPs in the but-for world.[381]

[redacted]

316. Dr. Singer's pass-through rates are also not credible because, in some instances, the rates change month to month as shares change month to month. Figure 14 shows Dr. Singer's pass-through rates for three developers with dramatic changes in pass-through rates over time.[382] Figure 14 shows that Dr. Singer's pass-through rates for [redacted] Inc., a

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Advertised Prices: Implications for Nine-Ending Effects," *Journal of Consumer Research,* Vol. 24, No. 2, 1997, pp.192-201 at 193-194; and Anderson, Eric and Duncan Simester, "The Role of Price Endings: Why Stores May Sell More at $49 than $44," May 2000, at http://ssrn.com/abstract=232542.

379 The developer only sold subscriptions through one app, com.ionicframework.oddhunter938355, that belongs to the Lifestyle category, in the class period.

380 See Exhibit 57.

381 Table 9 includes developers for whom Dr. Singer calculated a pass-through rate that could be matched to the transactions data and who sold apps, subscriptions, or IAPs to US consumers only at list prices ending in "99."

382 Share changes of this magnitude are not common in Dr. Singer's calculations, although they do exist. The graph and discussion demonstrate the nonsensical nature of Dr. Singer's pass-through rate formula.

developer with IAP transactions apps in the Entertainment category, ranged from [redacted] to [redacted] over the period from October 2017 to December 2020. [redacted] another developer with subscriptions in the Travel & Local category, had pass-through rates that ranged between [redacted] nd [redacted] over this period, and [redacted], an app with paid downloads in the Transportation category had pass-through rates of [redacted] to [redacted], based on Dr. Singer's calculations.[383] The pass-through rates in Figure 14 fluctuate simply because the share of unit sales for these apps within their respective app category happen to change from month to month. If Dr. Singer's pass-through rates were accurate (which they are not), and if costs were constant over time, the prices of the apps, subscriptions, or IAPs would change dramatically month to month as the developer passed through different percentages of cost in its prices. In fact, however, there are no observed changes in prices in these apps over time.[384]

[redacted]

6. Given the Circumstances of this Case, Economics and Empirical Data Consistently Show that Determining Pass-Through Rates Requires an Individualized Analysis

383 See this report's production.

384 IAPs offered by [redacted] Inc. have list prices ranging from [redacted] and have service fee rates ranging from [redacted] all remaining constant in the class period. The paid download of [redacted] has a list price [redacted] and a service fee rate of [redacted], both remaining constant in the class period. Finally, the subscriptions offered by [redacted] have list prices ranging from [redacted] with no changes in the class period. As is the case for all subscriptions whose customers have been subscribed for at least one year, the service fee rate was reduced from 30% to 15% starting in 2018. See this report's production.

317. The economic factors that determine pass-through and the empirical data in this matter consistently show that determination of pass-through requires an individualized analysis.

318. Two of Plaintiffs' experts attempted to estimate "common" pass-through rates: Dr. Singer and Dr. Williams. They employed different approaches, but both attempted to show that the pass-through rate can be estimated using evidence common to all developers. However, they came to opposite conclusions with regard to the magnitude of a common pass-through rate.

319. According to Dr. Singer, [redacted] of pass-through rates are greater than [redacted], indicating nearly complete pass-through. Dr. Singer finds that [redacted] of pass-through rates are positive, indicating that virtually every developer passed through at least some service fee rate increases to consumers, and therefore nearly all consumers were impacted.[385]

320. In contrast, according to Dr. Williams, [redacted] of the pass-through rates he considered are zero or negative, implying that [redacted] of developers did not pass through any of the price increases to consumers.[386]

321. Figure 15 below illustrates the two sets of results found by Consumer Plaintiffs' and Developer Plaintiffs' experts – which are nearly opposite of one another.

[redacted]

322. Obviously, both experts' analyses cannot be true. Based on the economic principles and the empirical evidence in this case, neither Dr. Singer's nor Dr. Williams' analysis is accurate because determining pass-through rates for apps, subscriptions, and IAPs requires an individualized analysis into the relevant supply and demand conditions as well as into the pricing strategies used by developers.

323. As discussed above, a variety of economic factors determine how service fee changes (in particular the fact that the service fee is assessed as a percentage of price) will be passed

385 See Exhibit 47.

386 Williams Report at ¶80.

through in retail app, subscription, and IAP prices, and those characteristics vary across apps and developers.

324. For those developers that set prices to maximize profits, a service fee change (where the service fee is assessed as a percentage of price) will be more likely to affect price if the marginal cost of the app is high.[387] With marginal cost equal to zero, Dr. Singer's own model shows that a change in the service fee rate will have no impact on price.

325. Some apps have a positive marginal cost. For example, apps that pay royalties based on usage of the apps, such as some music streaming apps and other apps that play music within the app are likely to have positive marginal costs. Apps that provide ongoing customer support such as some multi-player games that incur processing costs for communications across users, are likely to have positive marginal costs.[388] Other apps are likely to have marginal cost near zero. This is a well-recognized feature of this industry as well as other industries where the product can be created once and sold multiple times. If developers of those apps obtained a lower service fee rate in the but-for world, and if they set prices to maximize profits, there is a high likelihood that consumers that purchase their apps and IAPs would not have paid lower prices.

326. Determining which apps are in which group requires individualized analysis of the cost conditions of those apps.

327. Furthermore, service fee rate changes are also less likely to be passed through in retail prices if developers set prices to end in "99." That pricing strategy is highly prevalent in this case; 97% of transaction prices of apps, subscriptions and IAPs end in "99."[389] The strategy leads to a "stickiness" in retail prices and therefore even if a developer obtained a lower service fee rate in the but-for world, set prices to maximize profits, and had positive marginal cost, it may not have changed prices when the service fee rate changed.

328. Whether app and IAP prices respond to service fee rate changes will also depend on the competitive conditions faced by a developer and whether a developer's rivals change their app and IAP prices. Apps are highly differentiated products, and any one app may have few or many rivals.[390] Determining the competitive conditions for any app requires individualized analysis.

329. Determining whether a developer would reduce prices in response to a service fee rate change requires some understanding of the developer's price-setting strategy. Not all

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387 Singer Report at ¶225. In particular, the equations (P-C*)/P = 1/E_D and C* = C/(1-t) indicate that the change in price P in response to the change in service fee rate, t, depends on the level of C that captures marginal costs other than the service fee. This also assumes that either developers do not set prices to end in "99," or that if they do, a price change to a price that ends in "99" satisfies the profit-maximizing conditions.

388 It is possible that marginal costs could be negative, in the sense that some apps generate revenue through additional users from, for example, advertising. In a model where a developer maximizes profits and marginal cost is negative, a reduced service fee rate would lead to higher app, subscription or IAP prices.

389 See Exhibit 32.

390 See Section IV.A.

developers set prices to maximize profits and therefore the economic models and results that depend on profit-maximization are not relevant to all developers. [redacted][392] Given that developers have different strategies, and do not all set prices to maximize profits, inquiry into the strategies and what those strategies imply for price reductions in response to service fee rate changes is necessary to understand pass-through. That is an individualized inquiry.

330. While the Plaintiffs' experts for the two proposed classes reach conclusions that either nearly all pass-through rates are positive, or nearly all pass-through rates are zero, economic models and evidence regarding the marketplace indicate that determining a pass-through rate requires individualized analysis – including analysis about the marginal cost of the app, the available and closeness of substitutes for the app, whether the app developer follows a focal point pricing strategy, and the overall strategy of price-setting used by the app developer. Plaintiffs' experts do not account for any of these factors. Moreover, determination of damages for the two proposed classes is further complicated by their sizes as well as the numerous factors that would affect damages and vary across proposed class members. Plaintiffs' experts have not even attempted to account for such factors.

E. CONSUMER PLAINTIFFS' EXPERT'S CLAIM THAT ALL SERVICE FEES WOULD HAVE BEEN LOWER ONLY ASSUMES CLASSWIDE IMPACT

331. Dr. Singer has three different but-for service fee models.[393] He has one model for paid downloads – the Android App Distribution model,[394] another for subscriptions and IAPs –

391 [redacted]

392 [redacted]

393 Singer Report at ¶167.

394 Singer Report Table 3.

the IAP model,[395] and a third that combines paid downloads and IAPs – Android App Distribution/IAP model.[396]

332. Each of Dr. Singer's but-for service fee rates models assumes that Google sets a single service fee rate to maximize the profits it earns from Google Play on those types of transactions.[397] For example, Dr. Singer's Android App Distribution model assumes that Google sets a single service fee rate to maximize its profits on paid downloads and in the but-for world responds to competition by lowering the service fee rate to all developers with paid downloads. This is notwithstanding that in practice – and in the data Dr. Singer relied upon – not all developers have the same service fee rate.

333. Dr. Singer's profit maximization models that assume a single service fee rate in the actual world and return a single service fee rate in the but-for world also conveniently results in common impact. Indeed, in each of Dr. Singer's models, he does not allow for more than one service fee rate. Dr. Singer's models, therefore, assume the very thing – whether impact can be proven on a classwide basis – that he purports to test.

334. As described above, each of Dr. Singer's three models for but-for service fee rates requires a pass-through rate. In each of his three models, Dr. Singer uses the weighted average of the pass-through rates he obtained with the "one-minus-the share formula." For all the reasons described above, Dr. Singer's pass-through rates, both individually and as an average, are flawed. Therefore, Dr. Singer's but-for service fee rates, which depend on these pass-through rates, are flawed.

335. The pass-through rates in Dr. Singer's but-for service fee rate models matter to the results. For example, there is empirical evidence that some developers did not change their prices after a service fee rate reduction – that is, some pass-through rates are zero. If Dr. Singer had used a zero pass-through rate in Android App Distribution model, the but-for service fee rate for paid downloads would have been the same as the actual rate. That is, had Dr. Singer used a zero pass-through rate (for which there is empirical evidence for some proposed consumer class members), he would have found no impact to developers that

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395 Singer Report Table 5.

396 Singer Report Appendix 4. Dr. Singer also has a model that purports to find but-for Play Point value ("But-For Buyer-Side Platform Competition Model"). See Singer Report at Table 10. The Android App Distribution Model (Table 3), the Combined Android App Distribution/In-App Aftermarket Model (Table A4 in Appendix 4), and the Buyer Side Platform Competition Model (Table 10) all purport to be models of a platform where buyers (consumers) and sellers (developers) interact. However, in two of the models – the Android App Distribution Model and the Combined Android App Distribution/In-App Aftermarket Model only a but-for service fee rate is found while "prices" to consumers (e.g., promotions) are held fixed. In the Buyer Side Platform Competition Model, a but-for "price" to consumers is found but the service fee rate is held fixed. So, Dr. Singer arbitrarily fixes one side of the platform and finds an equilibrium price of the other side, while the prices on both sides should be part of the same equilibrium decision. This is acknowledged by Dr. Singer himself in his description of the Rochet-Tirole model he claims to apply. Singer Report at ¶181.

397 Dr. Singer's assumption that rates are set to maximize Google Play's profits on subsets of transactions or even all paid transactions is overly simplistic and does not consider that if that was Google's strategy, it would likely find some other way to monetize Google Play so that it charged developers who [redacted] of developers. See Exhibit 7.

offered paid apps. The same result is true for Dr. Singer's Android App Distribution/IAP model that combines paid downloads, subscriptions, and IAPs. If Dr. Singer had used a zero pass-through rate, the but-for service fee rate would have been the same as the actual rate.[398]

336. More generally, in each of Dr. Singer's three models of but-for service fee rates, different pass-through rates lead to different but-for service fee rates. The problem is that Dr. Singer has no reliable method to determine pass-through rates (or an average pass-through rate) and because a pass-through rate is an important factor in all of his models of but-for service fee rates, those models, and the results produced based on the models, are also not reliable.

1. Dr. Singer's Calculated But-For Rates Assume Classwide Impact

337. Each of Dr. Singer's models treats all developers as if they are all the same. None of the models considers or attempts to explain why developers in the actual world obtain different service fee rates or different services and none of the models attempts to determine whether rates or services in the but-for world would vary across developers. Each of the models is premised on the assumption that all developers in the actual world are the same and all developers in the but-for world are the same. As described above, this assumption is not true in the actual world and there is no reason that it would be true in the but-for world. In the actual world, developers offer different apps, with different values to app stores, and they rely on different business strategies that make existing app stores or distribution options more or less attractive to them.[399] Those differences have enabled some developers to negotiate lower rates and more services. Those differences across apps and developers would continue to exist in the but-for world. But Dr. Singer's models do not address these differences, the effect of those differences in the actual world, or how such differences would affect rates and services in the but-for world.

338. Dr. Singer's assumption is also contradicted by the fact that not all developers may have the same competitive options in the but-for world. At least [redacted] of putative class developers

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[398] Singer Report Table 3 and Appendix 4. Dr. Singer's model of subscription and IAP transactions (Table 5) similarly depends on a pass-through rate and given that the pass-through rate method utilized by Dr. Singer is flawed, those but-for service fee rates are flawed. In that model, a lower pass-through rate will lower the but-for rate service fee rate – the opposite effect found in the other two models. If the pass-through rate is zero in Dr. Singer's Table 5 model, the but-for service fee rate is [redacted], rather than his calculated but-for rate of [redacted]. The underlying reason for this contradiction is that in his model of subscriptions and IAPs only (Table 5), Dr. Singer assumes that Google Play acts only as a payment processor and Google Play maximizes profits without considering consumers or the value to developers of "matching" consumers and developers. See Singer Report at ¶206. There is no basis (or evidence) that this assumption holds for all developers or apps with subscriptions and IAPs. Moreover, the assumption is inconsistent with Dr. Singer's opinions related to Play Points. That is, Play Points not only can be used for subscriptions and IAPs (as well as paid downloads) but [redacted] See Lim Dep. Ex. PX 110 at -787 [redacted]

[399] Singer Report at ¶205 (Dr. Singer acknowledges that service fee rates pursuant to [redacted] and similar programs were 15% [redacted]; ¶148 ("Google has cut in half the take rate for subscriptions, which are not limited to mobile devices; for subscriptions the platform is not as important, and they could command a lower rate."); ¶148 [redacted]

(those that sell only at a $0.99 price) may not have the same options to independently contract with payment processors as others. Those developers offer apps, subscriptions, and IAPs at low price-points and because many payment processors include a per-transaction fee as well as a per-dollar fee to process transactions, the effective service fee rate from these payment processors for those developers is greater than 30%.[400] Dr. Singer explicitly disregards this fact. According to Dr. Singer, "Although many of the benchmark take rates in Table 6 entail a fee layered on top of a percentage of revenue, I do not impose such a fee in the but-for world modeled above."[401]

2. Dr. Singer's Calculations Rely on Inputs That Are Either Averages or Unsubstantiated Estimates Assumed to Apply to All Developers

339. In each of Dr. Singer's three models of but-for service fees, Dr. Singer takes certain inputs, such as an average app price, an average elasticity, and an average pass-through rate, among others, and then uses those inputs, along with certain assumptions about how Google sets its service fee rate to find a pass-through rate. In each model, Dr. Singer performs calculations twice: once for what he describes as the "actual world – monopoly" and then again for what he describes as the "but-for world – competitive." The principal difference between the actual and but-for calculations is that in the "but-for world-competitive" version, Google Play is assumed to have a 60% market share, instead of the market share Dr. Singer claims it has in the actual world.

340. The models' reliance on average inputs, as well as the models' finding of an average but-for service fee rate does not address the issue of common impact and masks the existence of developers that would not get a lower service fee rate in the but-for world. The models "hide" the fact that in the actual world some developers get a rate lower than the average rate and are incapable of determining whether a developer in the but-for world would get a lower rate than the average but-for rate.

341. Dr. Singer's but-for service fee rate models depend on numerous averaged inputs. For example, Dr. Singer uses an average app price of [redacted] when actual paid app prices vary from $0.01 to $400.00; and Dr. Singer uses an average subscription and IAP price of [redacted] when subscription and IAP prices vary from $0.01 to [redacted][402] Dr. Singer's calculations assume that consumers obtain a "negative price" from Google Play Points. As described below, even though Google Play Points are available to all consumers, [redacted][403] He uses an average pass-through rate of 89.9%, when his own predicted rates vary and there is empirical evidence that many pass-through rates are zero. He also constructs average elasticities for both consumers and developers.[404] Other inputs to Dr. Singer's models are based on

400 See Exhibit 31.

401 Singer fn. 485.

402 See this report's production.

403 See Exhibit 60; Exhibit 61.

404 See Singer work product and Tables 3, 5, and Appendix 4. That is, Dr. Singer's models are not regression analyses that utilizes prices (or service fees) for individual developers and simply return an

assumptions that Dr. Singer claims apply to all developers. For example, Dr. Singer assumes competition for developers is the same for all developers in the actual world and that the effect of the purported increase in competition will be the same for all developers. Dr. Singer's method inherently eliminates variation among developers to artificially manufacture impact, where it may not exist so that the absence of impact cannot be detected.

342. The results of Dr. Singer's models change if his average inputs are replaced by inputs that describe individual or particular sets of developers. As described above, Dr. Singer uses a single pass-through rate of 89.9%, which is the average of his calculated pass-through rates across all developers. While Dr. Singer's estimates of pass-through rates are inaccurate and do not reflect developers' pricing decisions, even those inaccurate estimates vary from 0% to 100%.[405] Moreover, there is empirical evidence that some pass-through rates are zero. Changing only the pass-through rate in Dr. Singer's models changes the results.[406]

343. Another important input to Dr. Singer's calculations is the increase in competition in the but-for world, which is characterized as an assumed reduction in Google Play's market share.[407] In the Android App Distribution model (Table 3) and in the combined Android App Distribution/IAP model (Appendix 4), Dr. Singer assumes Google Play's market share is 100% in the actual world and would be 60% in the but-for world. In the IAP model (Table 5), he assumes Google Play's share is [redacted] in the actual world and would be 60% in the but-for world.

344. In the actual world, Dr. Singer's assumptions about Google Play's market share imply that developers and consumers have no, or very limited alternatives to Google Play. This is not true. Dr. Singer recognizes that certain developers had alternatives to Google Play and were able to obtain service fee rates lower than 30% and he describes the service fee rates obtained by these developers as a "reasonable approximation of the but-for take rate."[408] In addition, Dr. Singer recognizes that many consumers have alternatives to Google Play. According to *his estimates*, over half of Android mobile devices have alternative app stores including the Samsung Galaxy Store which he finds to be available on approximately [redacted] of Android devices.[409]

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average result. Dr. Singer's method utilizes averages of prices (and other inputs) and returns an average of those averaged inputs – it is an average of many averages, all of which are assumed to be true for all developers.

405 Dr. Singer finds 282 pass-through rates that are zero because in a particular month, that developer's share of its category and transaction-type transactions is 100%. See Exhibit 47.

406 As discussed in the prior section, a zero pass-through rate would find no service fee rate overcharge in Dr. Singer's model of paid downloads and his model of combined paid downloads, subscriptions, and IAPs.

407 According to Dr. Singer's calculation, if Google Play's market share is lower, consumers' elasticity of demand for apps will be higher (more elastic) and the buyer-side take-rate elasticity will be higher (more elastic), and as described above, the service fee rate will be lower. See Singer Report Table 3.

408 Singer Report at ¶¶158, 205.

409 Singer Report Table 1.

345. Dr. Singer's assumption that Google Play's market share in the but-for world is 60%, in all three of his models, is based on AT&T's long-distance market share in 1993.[410] Dr. Singer provides no evidence that AT&T is a reasonable benchmark for Google Play, that the competitive conditions in long-distance during regulation reflect Google Play in the actual world, or that competitive conditions in long-distance years after AT&T's divestiture reflect app distribution or IAPs in the but-for world.

346. But even if AT&T in 1993 could be considered an appropriate benchmark for certain aspects of competition in the but-for world, for purposes here, the question is whether it is appropriate to assume that an increase in competition would affect all developers in the same way, with the same but-for Google Play market share – as Dr. Singer does.[411] The answer is no. Given the diversity among developers described above, Consumer Plaintiffs' claimed increased competition in the but-for world would affect developers differently, just as competition in the actual world has resulted in different service fees and different services to developers.

3. Dr. Singer's Models Find Any Change in Competition Leads to Lower Rates for All Developers

347. Dr. Singer's models assume that for *any* change in "competition" (as measured by some reduction in Google Play's market share), no matter how small, there would have been some reduction in the service fee rate for *all developers*.

348. Dr. Singer's models of but-for service fee rates imply that if, absent the alleged conduct, Google Play's market share fell by a single percentage point, the rate for all developers' IAPs would fall [redacted] (to [redacted])[412] and the rate for all developers' paid apps would fall [redacted] (to [redacted].[413]

349. Dr. Singer's conclusion that any change in Google's market share would lead to lower service fee rates is contradicted by evidence from the actual world. In South Korea, the ONE Store, according to Dr. Singer, has obtained [redacted] of payment volume.[414] Dr. Singer's model would find that in Korea, Google Play's service fee rates to all developers would have fallen significantly, but in fact, that has not occurred. Instead, Google Play has [redacted] and [redacted]

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410 Singer Report at ¶216.

411 Indeed, competitive conditions in long-distance are not reasonably reflected in AT&T's overall market share. For example, certain long-distance competitors were not available in all states, so AT&T's market share likely varied across geography. See https://www.sprint.com/companyinfo/history/timeline_02.html (showing Sprint was available in 19 states in 1993).

412 Singer Report Table 3. This is calculated by changing the "Buyer-side Product Price Elasticity" to the "Monopoly Elasticity" divided by 99%.

413 Singer Report Table 5. This is calculated by changing row [12], "Google Market Share in the But-For World," to [redacted].

414 Singer Report at ¶¶196-198.

[redacted][415] Dr. Singer's models assume that an increase in competition would have common impact, but the models fail to capture the way that competition works and that a purported increase in competition in the but-for world would not be common.

4. Dr. Singer's Profit-Maximization Models Do Not Consider That Google Can Utilize Alternative Monetization Strategies

350. Each of Dr. Singer's models assumes that Google sets service fees to maximize profits for either a subset of transactions or all paid transactions. This does not consider that Google has alternative ways to maximize profits and respond to competition, besides lowering service fee rates.

351. As described above, in Section VI.D, Google's alternative monetization strategies for Google Play would lead some developers to have higher costs in the but-for world and if those costs were passed through to consumers, as Dr. Singer claims, higher prices to consumers. Other developers could be better off with an alternative monetization strategy for Google Play. If those developers passed through benefits to consumers in lower prices, those consumers would have been better off in the but-for world. However, determining which consumers were worse off and which were better off depends on the alternative monetization strategy that would have been adopted by Google Play, which developers would have benefited, and which would have been made worse off from each strategy, as well as determining which consumers who purchased apps, subscriptions, or IAPs from those developers would have been better off and those that would have been worse off.

IX. PLAINTIFFS' EXPERTS' OPINIONS REGARDING GOOGLE PLAY POINTS DO NOT SHOW CLASSWIDE IMPACT

F. Google Play Points Program

352. Play Points is a consumer program that Google introduced in the U.S. in November 2019.[416] Before that, Google introduced the program in Japan and South Korea. Play Points allow consumers to earn "loyalty points" from purchases in Google Play that can then be used as Google Credits, to make purchases in Google Play, or redeemed for special IAPs.[417]

353. Google Play Points are available, without cost, to any consumer that registers to receive Play Points, but the program was [redacted]

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415 Dr. Sibley claims that Project Hug [redacted] Sibley Report at ¶241. Dr. Singer claims that Project Hug [redacted] See Singer Report at ¶110. Neither expert denies that Project Hug developers [redacted] Their opinions imply that absent Project Hug, which they characterize as exclusionary, the Project Hug developers [redacted] But whether these developers would be better off in the Plaintiffs' but-for world – without Project Hug – would require individualized proof of the deals that they would negotiate with other app stores and the terms of those deals compared to those they actually obtained in their individual negotiations with Google Play.

416 See Deposition of Tian Lim, November 28, 2021, ("Lim Dep"), Ex. 110 (GOOG-PLAY-002653782.R).

417 Lim Dep. at p.169.

[redacted] – those consumers that [redacted][418] One feature of the program, for example, is that consumers who spend more in Google Play earn more Google Play Points. There are at least four user "tiers," with each level requiring a higher level of consumer spend and providing more points per dollar of spend.[419] For example, "Bronze" has no minimum amount of spend and generates 1 point per dollar spent; while "Platinum" has a $3,000 per year minimum consumer spend and generates 1.4 points per dollar spent.[420] [redacted][421]

354. Google's Play Points program not only [redacted] but is attractive [redacted] Not all consumers register for and participate in Google Play Points. Among the roughly [redacted] U.S. consumers that transacted in Google Play during the period the Google Play Points program existed through 2021, only about [redacted] participated in Google Play Points.[422] That is, [redacted] of U.S. consumers did not participate at all in the Google Play Points program even though the program was available to them.

355. An even smaller percentage of consumers redeemed Play Points that were earned. From November 2019 through July 3, 2021, there were at most [redacted] U.S. consumers – about [redacted] of U.S. consumers in this period – that redeemed Play Points either by making transactions directly with the Play Points or by exchanging the Play Points for Google Credits and making purchases. In sum, [redacted][423]

G. PLAINTIFFS' EXPERTS' CLAIMS RELATED TO PLAY POINTS DO NOT SHOW CLASSWIDE IMPACT

356. Consumer Plaintiffs' and Developer Plaintiffs' experts claim that in the but-for world, Google would expand its Play Points program, offering consumers enhanced or expanded

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418 Lim Dep. Ex. PX 109 (GOOG-PLAY-000356806.R) at p. 22 [redacted] See also Lim Dep. Ex. PX 110 (GOOG-PLAY-002653782.R) at p. 17 [redacted] Lim Dep. Ex. PX 133 (GOOG-PLAY-000365029). [redacted] See Feng Dep. Ex. PX 532 (GOOG-PLAY-001284083.R) at p. 33.

419 See Lim Dep. Ex. PX 110 (GOOG-PLAY-002653782.R) describing a "Diamond" level.

420 See Lim Dep. Ex. PX 110 (GOOG-PLAY-002653782.R) and https://gadgetstouse.com/blog/2020/10/22/what-are-google-play-points-how-to-use/ There are other benefits, that are similarly scaled by tier, including points on movies and books and weekly prizes.

421 See e.g., Feng Dep. Ex. PX 538 (GOOG-PLAY-009903056) at p. 10; Feng Dep. Ex. PX 531 (GOOG-PLAY-000292207.R) at p. 7; Feng Dep. Ex. PX 532 (GOOG-PLAY-001284083.R) at pp. 6, 54.

422 See Exhibit 60.

423 See Exhibit 61. The [redacted] Play Points redemption rate for U.S. consumers is an upper bound estimate that assumes that all "stored value" transactions were Play Points redemptions, as Google's transaction data does not distinguish between different types of stored value transactions. Only [redacted] of U.S. consumers redeemed Play Points by making transactions directly with Play Points.

benefits.[424] Neither Developer Plaintiffs' nor Consumer Plaintiffs' experts provide any reasoning or evidence that even if Google expanded the Play Points program in the but-for world, either of the two classes would have experienced classwide impact. For the reasons discussed below, the effect of an expanded Play Points program would not be common for either class.

357. Dr. Singer describes Play Points as a subsidy or "negative price" set by Google to consumers for "accessing" Google Play and considers that Google could lower the service fee rate or as an alternative, increase Play Points, effectively lowering the prices of apps and IAPs directly to consumers. Dr. Singer claims that in the but-for world, because Google Play's market share would fall to 60% (based on AT&T's market share in 1993), consumers' "platform price" would fall from a [redacted] per transaction to a negative [redacted] per transaction.[425] This reduction in the "platform price" is assumed to occur through the expansion of Play Points.

358. Dr. Singer fails to consider that Google's Play Points program provides benefits to a relatively small percentage of U.S. consumers. Over the time period when the program was available, [redacted] of U.S. consumers participated in the program and only up to [redacted] of U.S. consumers earned and redeemed Play Points.[426] Such low redemption rates are not unusual and are not the result of any alleged conduct.[427] Dr. Singer offers no analysis to show that all consumers would even participate in an expanded Google Play Points program in the but-for world, much less obtain benefits from an expanded program.

359. Dr. Singer claims that Google would expand Play Points program substantially more than Dr. Williams claims Google would. According to Dr. Williams, in the actual world, redeemed Play Points accounted for about [redacted] of consumer spend and in the but-for world, the "median percentage reward" would have been [redacted][428] Dr. Singer finds that in the actual world, Play Points redeemed accounted for about [redacted] of consumer spend, but claims that in the but-for world, the expansion would have been nearly [redacted][429] – nearly [redacted] times what Dr. Williams claims.

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424 Williams Report at ¶¶96-97, Singer Report at ¶33.

425 Singer Report at ¶¶179, 184, 245, Table 10.

426 See Exhibit 61.

427 For example, credit card programs offer extensive rewards and still many consumers do not participate. Bureau of Consumer Financial Protection, "The Consumer Credit Card Market," September 2021, Figure 1 shows that despite availability of reward credit cards, in each segment some transactions are on non-reward cards. Dr. Williams acknowledges that redemption rates are "generally low, consistent with Google's experience." That is, the low redemption rate cannot be construed to be implicated in the alleged conduct and low redemption rates would persist in the but-for world. Williams Report at ¶103, fn.135. See also https://www.prnewswire.com/news-releases/customers-sitting-on-100-billion-of-unredeemed-loyalty-points-623828294.html ("more than one-fifth of program members have never redeemed.").

428 Williams Report at ¶99.

429 Singer Report Table 10.

360. Neither Dr. Singer nor Dr. Williams considers that developers participate in Play Points by offering discounts on IAPs. Those developers contribute to the funding of the Play Points program but also receive benefits in increased revenues. Depending on how an expansion of Play Points would occur, some developers may be worse off by such an expansion. Predicting the effects of an expanded Play Points program on developers, without considering these issues, is highly speculative. Dr. Singer's model of Play Points does not recognize that developers participate in the program and does not consider how changes in the program could affect developers – including potentially the service fees paid by developers.

X. CONCLUSION

361. For the reasons discussed above, I find that one cannot establish antitrust impact to members of the proposed developer class using proof that is common to the class given the many individualized issues specific to developers.

362. I also find that one cannot establish antitrust impact to members of the proposed consumer class using proof that is common to the class given the many individualized issues specific to consumers,

363. Highly individualized analyses would be necessary to determine whether any given member of either proposed class would have been better off in the but-for world, and if so, what that member's individual damages would be.

364. Based on my analysis, there is a reasonable probability that among putative developer class members, at least [redacted] likely would not have lower service fees in the but-for world because the costs of separately contracting with payment processors may exceed Google Play service fees. Those putative developer class members price only at $0.99 and the per transactions costs charged by many payment processors would raise the total costs of payment processing beyond 30%. In addition, there are [redacted] of putative developer class members who set prices of $1.99 or lower that may not have been impacted, depending on the price "mix" of these developers and the services beyond payment processing that are valued by these developers. For all of the reasons described in this report, the percentage of developer class members who cannot show antitrust impact or injury is likely even higher, given the many individualized issues that affect whether any given developer would have been better off in Plaintiffs' but-for world. These includes developers' individual pricing strategies, the potential for higher costs to developers, plausible changes to Google Play's monetization strategy in the but-for world, among others. Indeed, for reasons such as these, the percentage of uninjured class members are likely higher.

365. Furthermore, based on my analysis, it is likely that a small percentage of proposed consumer class members were impacted. The available empirical evidence shows that among those developers that had a service fee rate reduction, a small percentage (e.g., between [redacted] and [redacted] depending on transactions analyzed by Dr. Williams and me) passed through service fee rate reductions in lower prices. In addition, [redacted] of proposed consumer class members spent [redacted] or less in Google Play during the entire class period. If, in the but-for world, those consumers had to pay more for free apps or to protect themselves from security issues, those consumers likely would have been worse off in the but-for world. Some [redacted] of the proposed consumer class used DCB. If in the but-for world service fee rates for DCB did not fall (because that form of payment is more costly) or if DCB was no

longer available, those consumers may not be impacted and could have been worse off in the but-for world. Finally, [redacted] of proposed consumer class members did not participate in Google Play Points, even though it was available to them. Therefore, even if in the but-for world that program was expanded, there is no credible evidence that such an expanded Play Points program would have benefited all proposed consumer class members.

366. Neither Consumer Plaintiffs' nor Developer Plaintiffs' experts provide a methodology, using common proof, that identifies which putative class members, or how many, suffered antitrust impact or injury because of Google's alleged conduct. Nor have they attempted to identify and exclude from the class those putative class members who may be worse off in a but-for world without Google's alleged conduct.

Executed on March 31, 2022 in Washington D.C.

Michelle M. Burtis, Ph.D.

APPENDIX A

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Senior Consultant

PhD, Economics
University of Texas
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Professional history

2020-present	*Senior Consultant*, Charles River Associates, Washington DC
2015–2020	*Vice President*, Charles River Associates, Washington, DC
2012–2014	*Senior Advisor,* Cornerstone Research, Inc., Washington, DC
2006–2011	*Vice President,* Cornerstone Research, Inc., Washington, DC
2004–2006	*Managing Director, Competition Policy,* LECG, Washington, DC
1998–2006	*Director,* LECG, Washington, DC
1988–1998	*Vice President,* Capital Economics, Washington, DC
1986–1988	*Associate,* ICF Incorporated, Washington, DC
1985–1986	*Lecturer,* University of Texas, Austin, TX

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https://play.google.com/console/about/storelistings/

https://play.google.com/console/about/translationservices/

https://play.google.com/console/about/vitals/

https://play.google.com/store/apps/details?id=com.activision.callofduty.shooter

https://play.google.com/store/apps/details?id=com.aspiro.tidal

https://play.google.com/store/apps/details?id=com.att.callprotect

https://play.google.com/store/apps/details?id=com.bethsoft.DOOM

https://play.google.com/store/apps/details?id=com.budgestudios.googleplay.ThomasAndFriendsMagicalTracks

https://play.google.com/store/apps/details?id=ch.threema.app&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=com.downdogapp

https://play.google.com/store/apps/details?id=com.dragonscapes.global

https://play.google.com/store/apps/details?id=com.facebook.katana

https://play.google.com/store/apps/details?id=fi.reworks.redecor

https://play.google.com/store/apps/details?id=com.footlocker.approved

https://play.google.com/store/apps/details?id=com.infonow.bofa

https://play.google.com/store/apps/details?id=com.illumix.fnafar

https://play.google.com/store/apps/details?id=com.kii.safe

https://play.google.com/store/apps/details?id=com.king.candycrushsaga

https://play.google.com/store/apps/details?id=gov.loc.nls.dtb

https://play.google.com/store/apps/details?id=com.maize.digitalClock

https://play.google.com/store/apps/details?id=com.marvel.unlimited

https://play.google.com/store/apps/details?id=com.mojang.minecraftpe

https://play.google.com/store/apps/details?id=com.nike.ntc

https://play.google.com/store/apps/details?id=com.nike.omega

https://play.google.com/store/apps/details?id=com.nike.snkrs

https://play.google.com/store/apps/details?id=com.pacific.wildlands

https://play.google.com/store/apps/details?id=com.phone.launcher.android

https://play.google.com/store/apps/details?id=com.pixelberrystudios.choices

https://play.google.com/store/apps/details?id=com.PixelStudio

https://play.google.com/store/apps/details?id=com.thehomedepot

https://play.google.com/store/apps/details?id=com.nytimes.android

https://play.google.com/store/apps/details?id=com.zynga.livepoker

https://play.google.com/store/apps/details?id=fi.reworks.redecor

https://play.google.com/store/apps/details?id=me.lyft.android

https://play.google.com/store/apps/details?id=net.bookedin.bam

https://play.google.com/store/apps/details?id=org.kustom.wallpaper.pro

https://play.google.com/store/apps/details?id=com.raed.sketchbook

https://play.google.com/store/apps/details?id=sts.al

https://play.google.com/store/apps/developer?id=Lowtech+Studios

https://play.google.com/store/apps/details?id=com.sega.sprint

https://play.google.com/store/apps/details?id=com.tayasui.sketches

https://play.google.com/store/apps/details?id=com.symantec.mobilesecurity&hl=en_US

https://play.google.com/store/apps/details?id=com.lookout&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=com.robokiller.app&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=com.nordvpn.android&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=com.symantec.securewifi&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=com.callpod.android_apps.keeper&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=com.antivirus&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=hotspotshield.android.vpn&hl=en_US&gl=US

https://play.google.com/store/apps/details?id=com.avast.android.mobilesecurity&hl=en_US&gl=US

https://publishers.apps.bemobi.com//Opera-Microsoft-FAQ.html

https://seller.samsungapps.com/notice/getNoticeDetail.as?csNoticeID=0000002677

https://seller.samsungapps.com/notice/getNoticeDetail.as?csNoticeID=0000004278

https://slack.com/help/requests/new

https://steamcommunity.com/groups/steamworks/announcements/detail/1697191267930157838

https://store.wsj.com/shop/us/us/wsjuelnsb20/

https://support.google.com/googleplay/android-developer/answer/10532353

https://support.google.com/googleplay/android-developer/answer/10632485

https://support.google.com/googleplay/android-developer/answer/6112435

https://support.google.com/googleplay/android-developer/answer/9306917

https://support.google.com/googleplay/android-developer/answer/9859673

https://support.google.com/googleplay/answer/2651410

https://support.google.com/paymentscenter/answer/9003744

https://support.tidal.com/hc/en-us/articles/115003662825-Subscription-Types

https://techcrunch.com/2018/12/06/epic-games-store/

https://tinder.com/en-GB/feature/subscription-tiers

https://docs.unity.com/ads/UnityAdsHome.html

https://ubisoftconnect.com/en-US/

https://us.shop.battle.net/en-us

https://www.amazon.com/gp/help/customer/display.html?nodeId=GP96AU3MQ58FMV8U

https://www.androidauthority.com/android-market-google-play-history-754989/

https://www.androidauthority.com/best-sideloaded-apps-android-1155580/

https://www.businessofapps.com/ads/leadbolt/

https://www.centurygames.com/about/

https://www.downdogapp.com/faq

https://www.downdogapp.com/purchase

https://www.epicgames.com/fortnite/en-US/faq

https://www.epicgames.com/fortnite/en-US/mobile/android/get-started

https://www.epicgames.com/fortnite/en-US/vbuckscard

https://www.epicgames.com/site/en-US/epic-games-store-faq

https://www.epicgames.com/store/en-US/news/the-epic-games-store-is-now-live

https://www.facebook.com/audiencenetwork/

https://www.ftc.gov/system/files/documents/reports/privacy-data-security-update-2019/2019-privacy-data-security-report-508.pdf

https://www.hbomax.com/ways-to-get

https://www.help.tinder.com/hc/en-us/articles/115003356706-How-do-I-create-a-Tinder-account-

https://www.iheart.com/offers/

https://www.investopedia.com/articles/investing/102615/story-instagram-rise-1-photo0sharing-app.asp

https://www.marvel.com/unlimited

https://www.microsoft.com/en-us/store/apps/windows

https://www.minecraft.net/en-us/store/minecraft-android

https://www.mopub.com/en

https://www.myfitnesspal.com/premium?source=menu_bar

https://www.nytimes.com/2015/06/03/technology/instagram-to-announce-plans-to-expand-advertising.html

https://www.origin.com/usa/en-us/store

https://www.pandora.com/plans

https://www.paypal.com/us/business/pricing

https://www.paypalobjects.com/marketing/ua/pdf/US/en/feepages-080221.pdf

https://www.braintreepayments.com/braintree-pricing

https://stripe.com/pricing

https://squareup.com/us/en/payments/our-fees

https://www.polygon.com/2019/4/5/18295833/epic-games-store-controversy-explained

https://www.prnewswire.com/news-releases/customers-sitting-on-100-billion-of-unredeemed-loyalty-points-623828294.html

https://www.protocol.com/bulletins/microsoft-store-commission-cut

https://www.sprint.com/companyinfo/history/timeline_02.html

https://www.storemaven.com/academy/how-to-choose-an-app-category/

https://www.theverge.com/2018/11/30/18120577/valve

https://www.voodoo.io/publishing

https://www.wikiwand.com/en/Opera_Mobile_Store

https://www.federalreserve.gov/releases/h10/hist

https://www.xbox.com/en-US/microsoft-store

https://www.disneyplus.com/welcome/stream-now

https://www.microsoft.com/en-us/microsoft-365/onedrive/compare-onedrive-plans

https://myscholly.com/faqs/

https://play.google.com/store/apps/details?id=idle.empire.tycoon.bicoin

https://play.google.com/store/apps/details?id=com.taptapfun.idlebusiness

https://play.google.com/store/apps/details?id=com.gpk.CavemenIdle

https://play.google.com/store/apps/details?id=azon.chips

https://play.google.com/store/apps/details?id=net.lionbird.google.toycity

https://play.google.com/store/apps/details?id=dovi.coalmining.inc

https://play.google.com/store/apps/details?id=de.rki.covpass.app

https://play.google.com/store/apps/details?id=com.bluetick.deepsea

https://play.google.com/store/apps/details?id=com.MadDiamond.EcoRobotics

https://play.google.com/store/apps/details?id=com.kwgames.packagefactory

https://play.google.com/store/apps/details?id=com.HyperMode.GarageLand

https://play.google.com/store/apps/details?id=com.h8games.handicraft

https://play.google.com/store/apps/details?id=com.samsung.android.service.health

https://play.google.com/store/apps/details?id=com.google.android.wearable.healthservices

https://play.google.com/store/apps/details?id=com.aliensidea.houseagent

https://play.google.com/store/apps/details?id=com.adc.tty

https://play.google.com/store/apps/details?id=games.electricmonkeys.idlecompost

https://play.google.com/store/apps/details?id=com.puzzlecorp.daycare.idle.game

https://play.google.com/store/apps/details?id=com.tycoonidledentalclinic.empire

https://play.google.com/store/apps/details?id=com.jk.and.bar
https://play.google.com/store/apps/details?id=com.hwqgrhhjfd.idlefastfood
https://play.google.com/store/apps/details?id=com.neonplay.casualgolfclubtycoon
https://play.google.com/store/apps/details?id=jp.geeplus.IdleHeroHacker
https://play.google.com/store/apps/details?id=com.survival.builders
https://play.google.com/store/apps/details?id=com.forgegames.idlelaundry
https://play.google.com/store/apps/details?id=com.tbegames.and.best_idle_taps_builder_tycoon
https://play.google.com/store/apps/details?id=com.platypus.games.idle.mosquitoes
https://play.google.com/store/apps/details?id=com.holoboo.idlerescue
https://play.google.com/store/apps/details?id=com.funcell.idleschool
https://play.google.com/store/apps/details?id=com.zrl.shootingparty
https://play.google.com/store/apps/details?id=com.ludigames.android.anmp.idle.siege
https://play.google.com/store/apps/details?id=com.fanshi.zhengjing.skipark
https://play.google.com/store/apps/details?id=com.heatherglade.idlestartupper
https://play.google.com/store/apps/details?id=com.mm.idlemutou
https://play.google.com/store/apps/details?id=com.lehuo.school.an.gp
https://play.google.com/store/apps/details?id=com.montaponta.idleplanecrashsurvival
https://play.google.com/store/apps/details?id=com.Nostrovia.Jonk
https://play.google.com/store/apps/details?id=com.codigames.idle.law.empire.tycoon
https://play.google.com/store/apps/details?id=com.sablostudio.matches.craft.idle.game
https://play.google.com/store/apps/details?id=com.sablostudio.mining.tycoon.idle.game
https://play.google.com/store/apps/details?id=com.gpk.modelagency
https://play.google.com/store/apps/details?id=com.danybons.tavernmaster
https://play.google.com/store/apps/details?id=com.police.tycoon
https://play.google.com/store/apps/details?id=com.adc.iaraft
https://play.google.com/store/apps/details?id=com.warrior.ranchland.gp
https://play.google.com/store/apps/details?id=com.samsung.android.wear.shealth
https://play.google.com/store/apps/details?id=com.gpk.seaexplorers
https://play.google.com/store/apps/details?id=com.google.android.apps.security.securityhub
https://play.google.com/store/apps/details?id=com.somniumgames.roveridle
https://play.google.com/store/apps/details?id=com.metamoki.sushi
https://play.google.com/store/apps/details?id=soft.eac.startup
https://play.google.com/store/apps/details?id=cc.LionStudios.IdleFactory
https://play.google.com/store/apps/details?id=com.levelex.pantheon
https://play.google.com/store/apps/details?id=com.funcell.treesinc
https://play.google.com/store/apps/details?id=com.hg.chuanqi.usedcar
https://play.google.com/store/apps/details?id=com.soul.zhongjianshang

https://play.google.com/store/apps/details?id=com.google.android.apps.camera.services

https://play.google.com/store/apps/details?id=com.google.android.videos

https://play.google.com/store/apps/details?id=com.privateinternetaccess.android

https://play.google.com/store/apps/details?id=com.cjin.pokegenie.standard

https://play.google.com/store/apps/details?id=com.funanduseful.earlybirdalarm

https://play.google.com/store/apps/details?id=com.asmodeedigital.scythe

https://play.google.com/store/apps/details?id=com.nianticlabs.pokemongo

https://www.alltrails.com/pro?ref=header

APPENDIX C

DEFINITION OF "U.S." DEVELOPER

1. Developer Plaintiffs describe their proposed class as:

   "All U.S. persons or entities that paid Google a "service fee" of greater than 15% on any paid Android OS app or paid in-app content (including subscriptions) sold in or via the Google Play store, in or via any U.S. or foreign Google Play storefront.[430]

2. Developer Plaintiffs have not defined what constitutes a "U.S." developer as it pertains to their proposed class definition and how such developers can be identified. Dr. Williams uses Google's App-level data to identify putative developer class members.

3. Using a Google dataset is not an appropriate way to identify "U.S." developers because Google datasets are at times not consistent. For example, App-level spend data and App Catalog data both include developers' country identifiers. [redacted][432]

4. [redacted]

5. [redacted]

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430 Developer Complaint at ¶244.

431 [redacted] The App Catalog data is a "snapshot" of data as of May 5, 2021. Therefore, the App Catalog data does not show changes in app ownership over time and for that reason, does not provide precise matches to developers in the App-level spend data.

432 See Exhibit 62. [redacted] developers, or [redacted], have no country information available in the App Catalog data.

433 See this report's production.

434 https://www.centurygames.com/about/

[redacted][435]

6. [redacted][436]

7. Whether some of the developers considered "U.S." developers by Dr. Williams and Developer Plaintiffs are, in fact, U.S. developers depends on the definition of U.S. developer – which was not provided in the proposed class definition.

8. [redacted] and [redacted] are only examples. Whether one or the other should be considered a U.S. developer could depend on criteria that must be collected and assessed on an individualized basis.

9. There are additional issues about developers' class definition that must be addressed. [redacted] For purposes of this report, unless otherwise described, a developer identified in the App-level spend data is considered a unique developer and no attempt has been made to account for cross-ownership among the developers. Nonetheless, the corporate structure is likely important to the identification of at least some prospective members of the putative developer class.

10. There also is further ambiguity in the class definition regarding the term "developer." A developer could be the *creator* of the app or the *publisher* of the app – which, in some cases, are different entities.[437] If the class definition is intended to refer to *creator*-developers, then some proposed class members would not appear in Google data at all, since only the publisher-developers interact with Google. Moreover, the terms of the relationship between the *publisher*-developer and the *creator*-developer are not available in Google data (or generally known by Google) and could imply that reducing the service fee charged to the *publisher*-developer would not affect the *creator*-developer. If the class definition is intended to include *creator*-developers, individualized analysis would be required not only to identify the proposed class member but to determine whether the proposed class member could have been impacted by an allegedly high service fee rate. The Developer Plaintiffs' class definition refers to "U.S. persons or entities who paid Google a service fee" which

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435 [redacted] are developers in the App-level Data used by Dr. Williams with a country code of "U.S." See this report's production.

436 [redacted]

437 See, for example, the developer [redacted], who is an independent creator-developer versus a publisher-developer such as [redacted] who contracts with creators. Both [redacted] and [redacted] are identified in Google Play as developers while the developer-creators who contract with Voodoo are not identified in Google Play or in Google Play data. See [redacted]

would suggest a publisher. But if a publisher-developer passes the fee onto a creator-developer, it is unclear how these entities fit into the Plaintiffs' definition.

APPENDIX D

SUMMARY OF DEVELOPER TOOLS AND SERVICES IN GOOGLE PLAY

1. This appendix provides a brief summary of services and tools made available to developer that use Google Play based on publicly available information and evidence from the record in this case. It is not intended to be a comprehensive description of all services available in Google Play or to catalogue all facts about those services relevant to the merits of Plaintiffs' claims.

2. The services available to all Google Play developers include four categories of services: developer publishing tools; developer commerce tools; app discovery; and app distribution. These tools are available to all developers, and they are especially valuable to small developers who may not have these same types of resources available to them from other sources.

3. Google Play provides many tools that enable developers to publish apps for consumers who use the diverse set of Android mobile devices. There are tens of thousands of different combinations of Android device characteristics relevant to the use of apps – characteristics such as the amount of memory, the memory configuration of the device, the CPU, the GPU, screen resolution, and others.[438] Whether an app will work at all, or will work well, can differ across devices and depend on those configurations. Google Play offers tools that enable developers to improve app functionality across the diverse set of Android mobile devices and to assist in the management and marketing of apps. These include tools used by developers prior to the release of the app to test the app by a small group of trusted users or by a larger group,[439] to reduce the size of the app to save storage space on a consumer device and reduce latency that may lead to lower spend on an app,[440] and to access and incorporate app bundles that contain the elements an app needs to install correctly on mobile devices.[441]

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438 Lim Dep. at pp. 59, 228.

439 https://play.google.com/console/about/closed-testing/; https://play.google.com/console/about/internal-testing/; https://play.google.com/console/about/opentesting/

440 https://play.google.com/console/about/app-bundle-explorer/

441 https://play.google.com/console/about/internalappsharing. See also Lim Dep. at p. 63. Google offers many other publishing tools to developers. See e.g., https://play.google.com/console/about/devicecatalog/ ("device catalog" that can be used to view and identify mobile devices that are compatible with the app); https://play.google.com/console/about/keymanagement/ (security "keys" for publishing the app); https://play.google.com/console/about/pre-registration/ (pre-registration which allows users to receive a notification when the app is available or to have the app auto-installed at launch); https://play.google.com/console/about/storelistings/ (help in creating store listings that appeal to users); https://play.google.com/console/about/store-listing-experiments/ (ways for developers to experiment and test alternative listings); https://play.google.com/console/about/translationservices/ (Google Play allows apps to be translated into many languages and offers automated translations service); https://play.google.com/console/about/acquisitionreporting/; https://play.google.com/console/about/stats/ (services that allow developers to track and analyze user acquisition trends);

4. Google Play provides developers with the ability to engage in a myriad of different types of paid transactions. Through Google Play Billing, developers are able to efficiently receive payments from an international audience.[442] Google Play facilitates transactions in over 135 countries, applying the relevant taxes across numerous different jurisdictions in varying different currencies.[443] Google Play also provides the means to transact with various different forms of payment, including credit cards, debit cards, PayPal, DCB, Google Pay, and gift cards used in the countries in which the store is available.[444]

5. The availability of payment processing services across many countries is important to those developers who offer apps available internationally. Among the [redacted] "U.S." developers, [redacted] have some sales outside of the U.S. and [redacted] earn more than [redacted] of their revenue from consumers outside of the U.S.[445]

6. [redacted]

https://play.google.com/console/about/playgamesservices/ (Play Game Services provides game app developers with features such as automatic sign-in, leaderboards and others); https://play.google.com/console/about/vitals/ (Android Vital is a service that allows developers to monitor and improve the technical quality of apps by providing information to prioritize and debug issues impacting users.).

442 https://developer.android.com/distribute/play-billing ("Google Play supports over 135 countries to buy and sell digital goods, which means you can sell to a global audience without collecting separate payment information or looking into regulations in each country."). See also https://support.google.com/googleplay/android-developer/answer/10532353 (publicly available list of. 172 "consumer locations" for which Google supports paid transactions).

443 See https://support.google.com/googleplay/android-developer/answer/9306917 (showing varying currencies supported by Google Play).

444 https://developer.android.com/distribute/google-play; https://support.google.com/googleplay/answer/2651410

445 App-level spend data, Developers, GOOG-PLAY-005535885 and GOOG-PLAY-010801689. See this report's production. Through Google Play's billing system, Google processes and pays the fees on behalf of developers and manages a payment infrastructure that makes it easy and safe for consumers to engage in transactions. Google Play's fraud protection encourages consumers to engage in transactions. Google offers chargeback protection to developers; it will evaluate chargebacks and fight them on the developer's behalf. In addition, Google has automatic fraud detection by using advanced risk modeling and leverages cross-industry resources like the worldwide fraud blocklist. They will cancel any active orders associated with the same fraudulent credit card. https://support.google.com/paymentscenter/answer/9003744.

446 See GOOG-PLAY-000337564 at 587. These costs represent Google's cost; it may be difficult for developers to replicate the processing costs and therefore developers who process their own payments could have higher costs than Google's.

[redacted][447]

7. App discovery refers to the way in which consumers become aware of an app. In general, developers obtain discovery through app stores, such as Google Play, or by purchasing advertising. [redacted] Google Play services are especially important to developers who do not have a recognized reputation or brand or who do not have the resources necessary to invest in advertising and marketing themselves to promote their apps. For some developers, Google Play discovery features are a more effective way to obtain consumer installs compared to the cost of obtaining installs through advertising.[449]

8. Another important service provided by Google Play is the delivery of the app, and its updates, to the consumer's device.[450] Google Play delivery is designed to ensure that the app is genuine and not malicious, and that the app is not corrupted or damaged through delivery. [redacted][451] Google Play Protect is a security feature to ensure apps are not malicious. Each day Google Play Protect scans all of the apps on Android phones and works to prevent the installation of harmful apps and keep the devices and data safe.[452]

9. Delivery costs vary across apps depending on the size of the app, the number of consumers who have installed the app, and the frequency of updates. Thus, changes in app delivery may leave some developers – those most dependent on current services – worse off.

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447 See GOOG-PLAY-000337564 at 630 [redacted]

448 See GOOG-PLAY-000541836. [redacted]

449 Google Play also provides the opportunity for consumers to pre-register for an app prior to its launch and receive notification when it is available. See https://developer.android.com/distribute/best-practices/launch/pre-registration. Google Play Instant and the Try Now feature allows consumers to try an app without having to install or pay for it. See https://developer.android.com/topic/google-play-instant/overview; https://developer.android.com/distribute/google-play. Through Google Play Instant, developers publish an "instant app" that allows consumers to see a "demo" version or a "lite" version of the app. This feature encourages consumers to try apps, which ultimately leads to increased installations and revenue generation for developers. https://developer.android.com/topic/google-play-instant/overview.

450 In its business documents, Google refers to the delivery of the app and its updates as "distribution."

451 See GOOG-PLAY-000286913 at 917.

452 https://developers.google.com/android/play-protect/phacategories; https://developers.google.com/android/play-protect

10. [redacted][454]

453 See GOOG-PLAY-000565172.R at slides 18-19.

454 See GOOG-PLAY-000237766. [redacted]

Exhibit 1

Exhibit 2

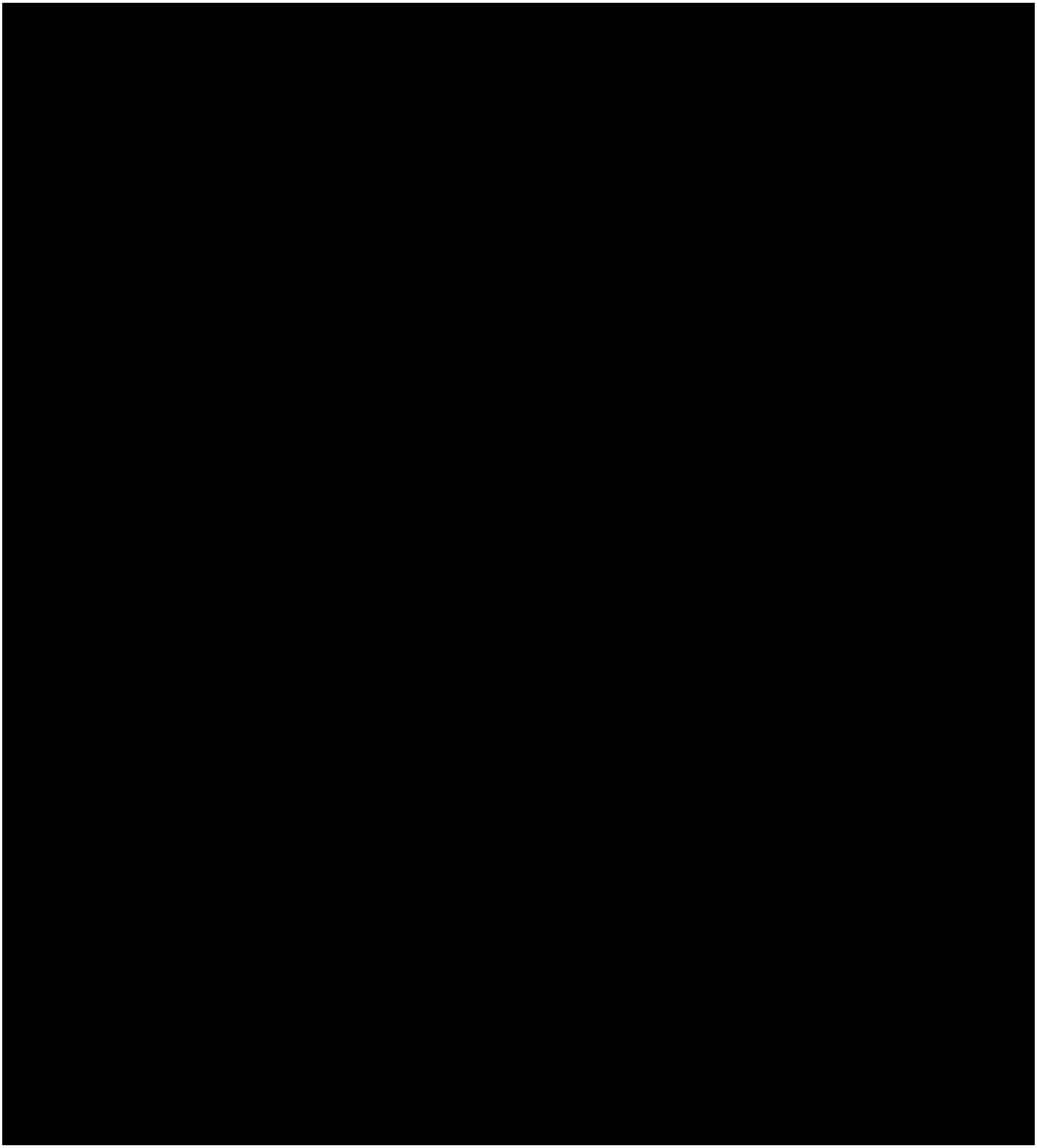


Exhibit 3

Exhibit 4

Exhibit 5

Exhibit 6

Exhibit 7

Exhibit 8

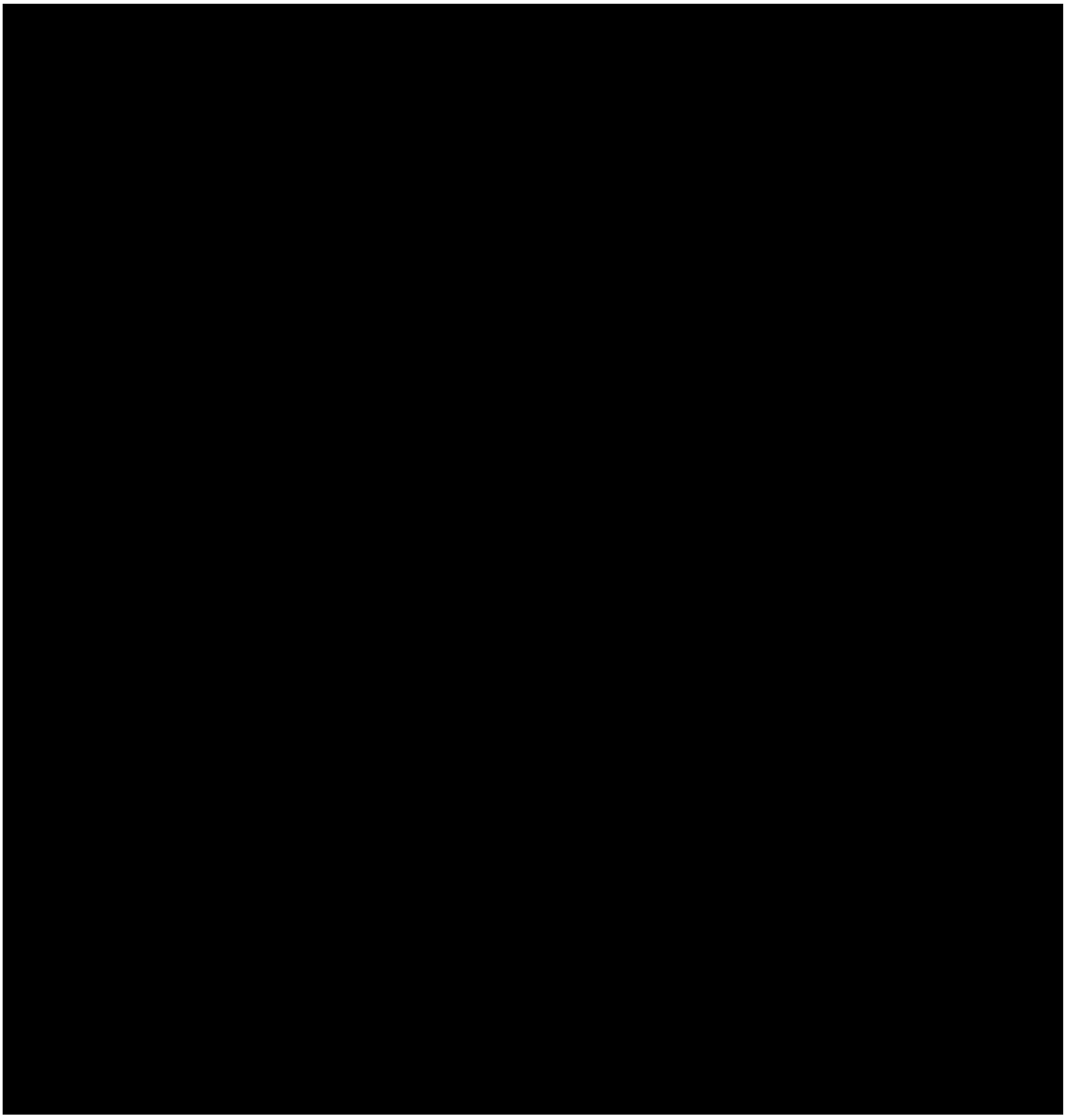


Exhibit 9

Exhibit 10

Exhibit 11

Exhibit 12

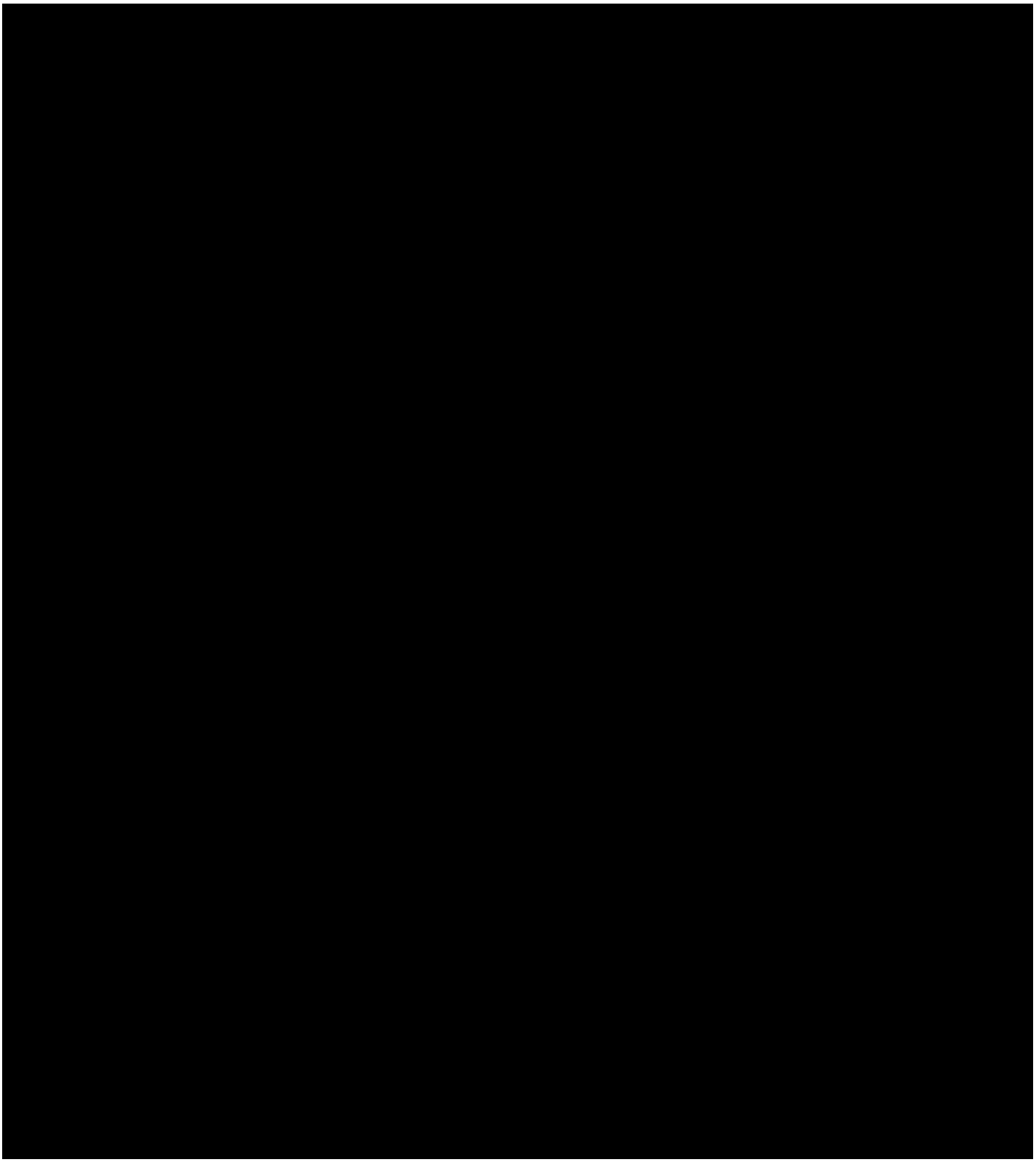
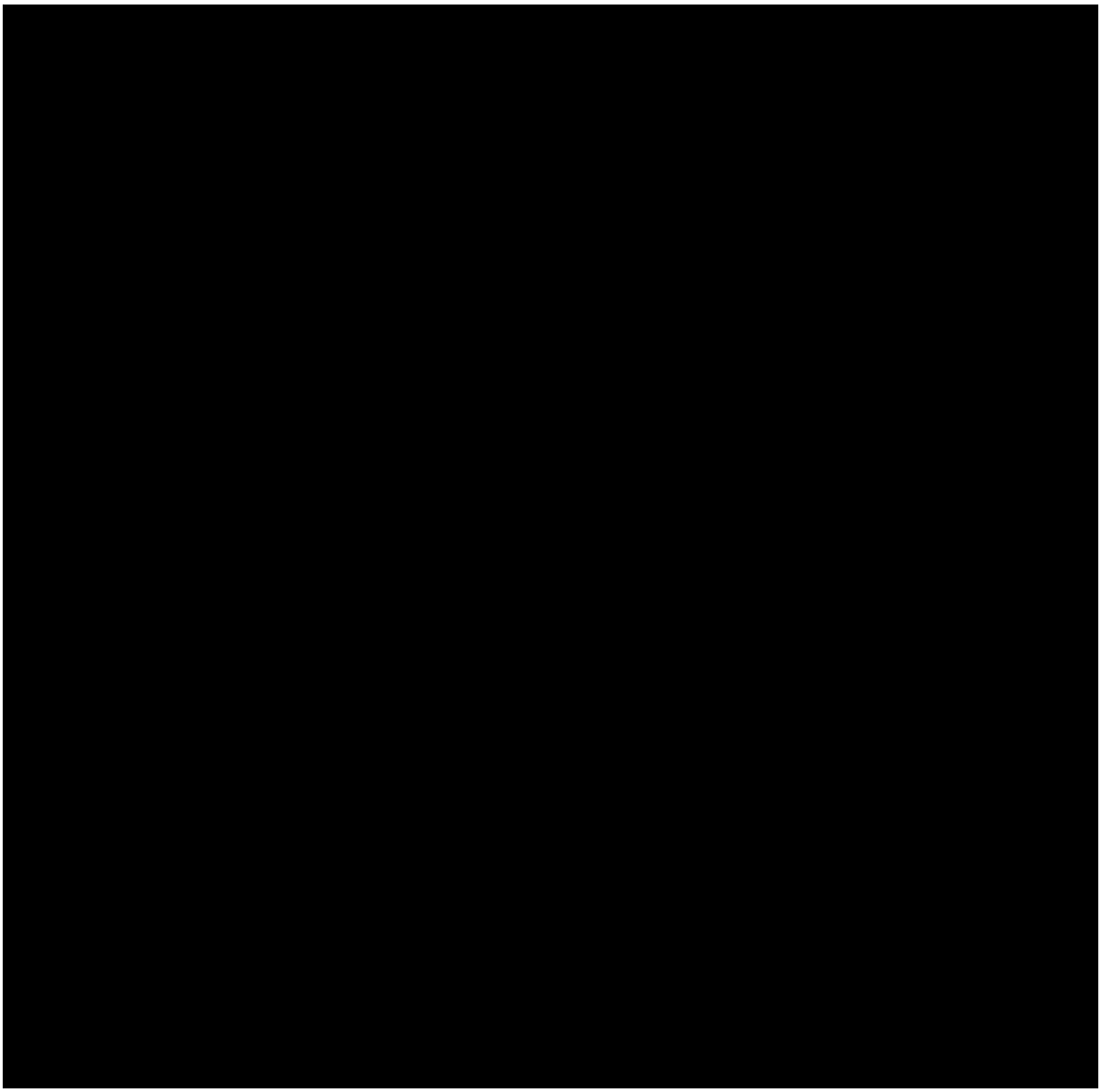


Exhibit 13



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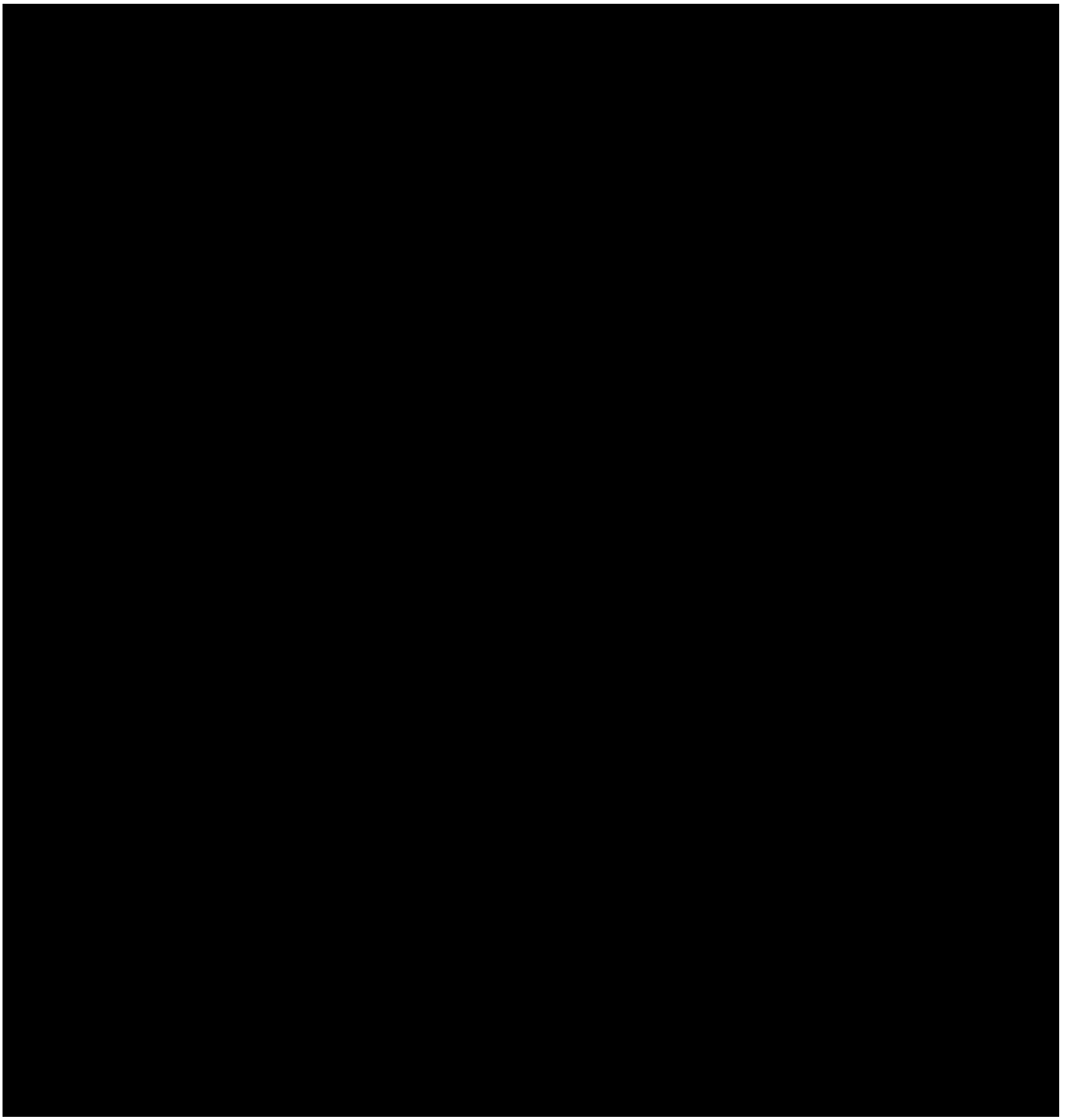


Exhibit 15

Exhibit 16

Exhibit 17

Exhibit 18

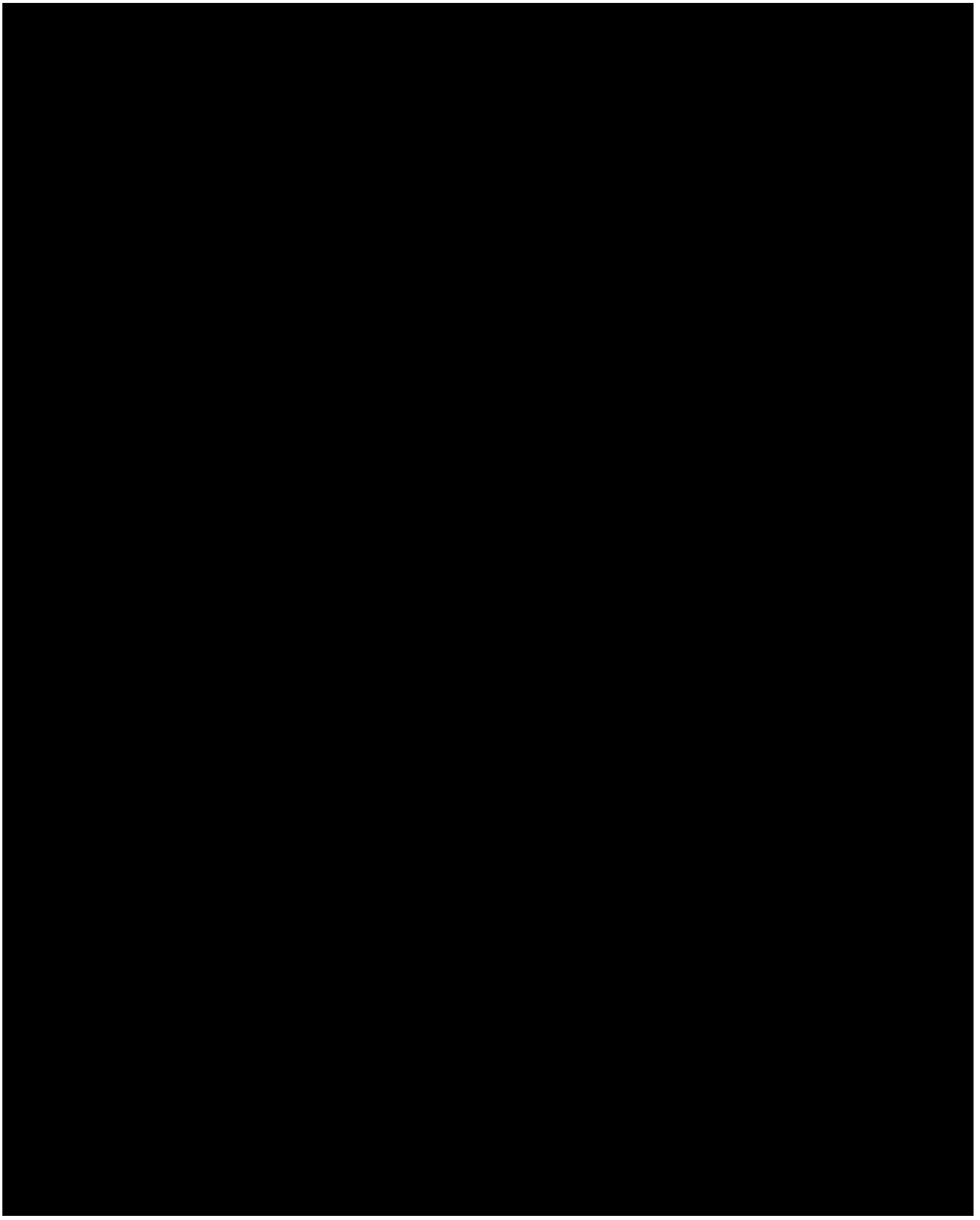


Exhibit 18 (Continued)

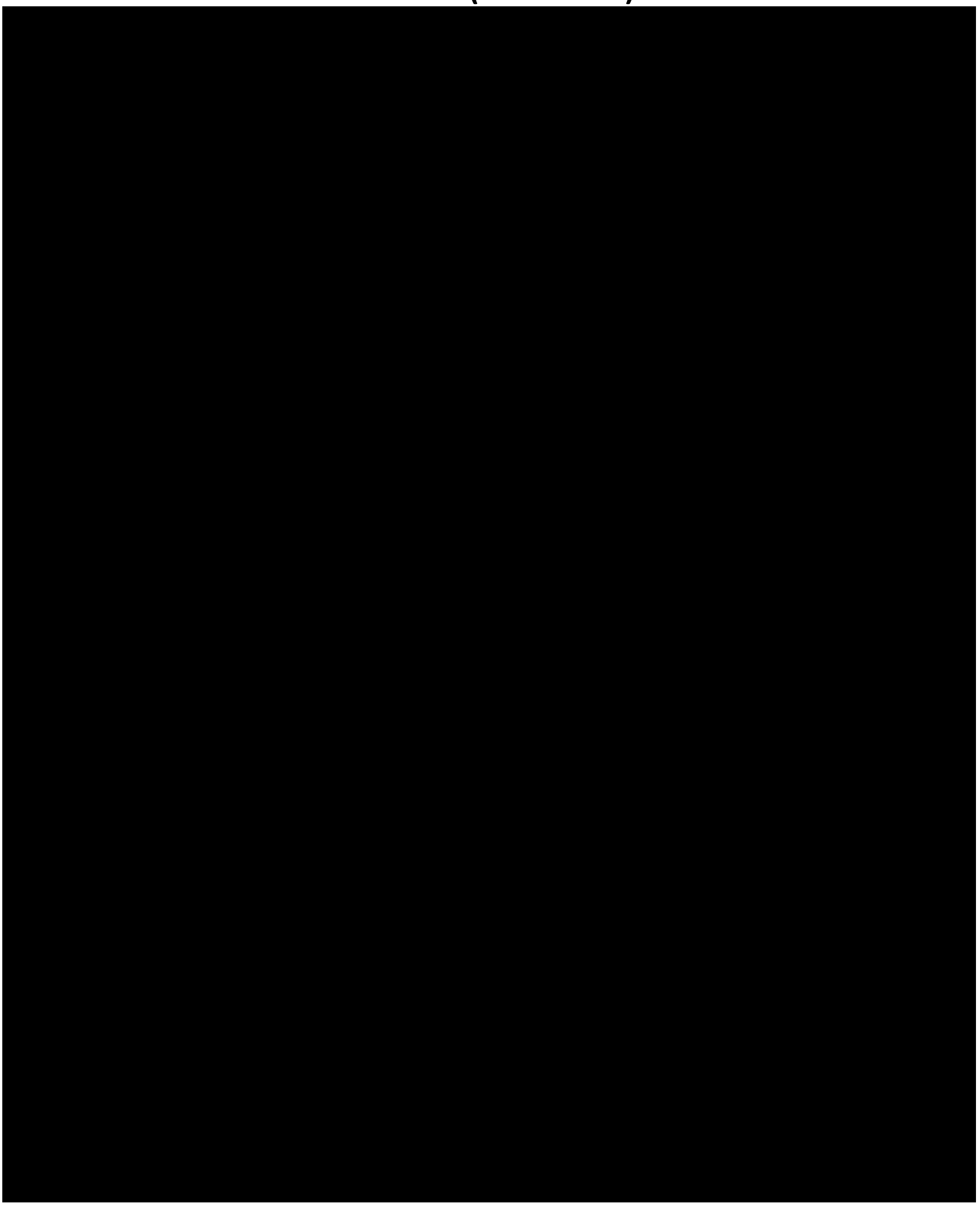


Exhibit 18 (Continued)

Exhibit 19

[redacted]

Udemy	60	$ 65,764,660	$ 19,557,356	0.2%	79.0%	

Exhibit 19 (Continued)

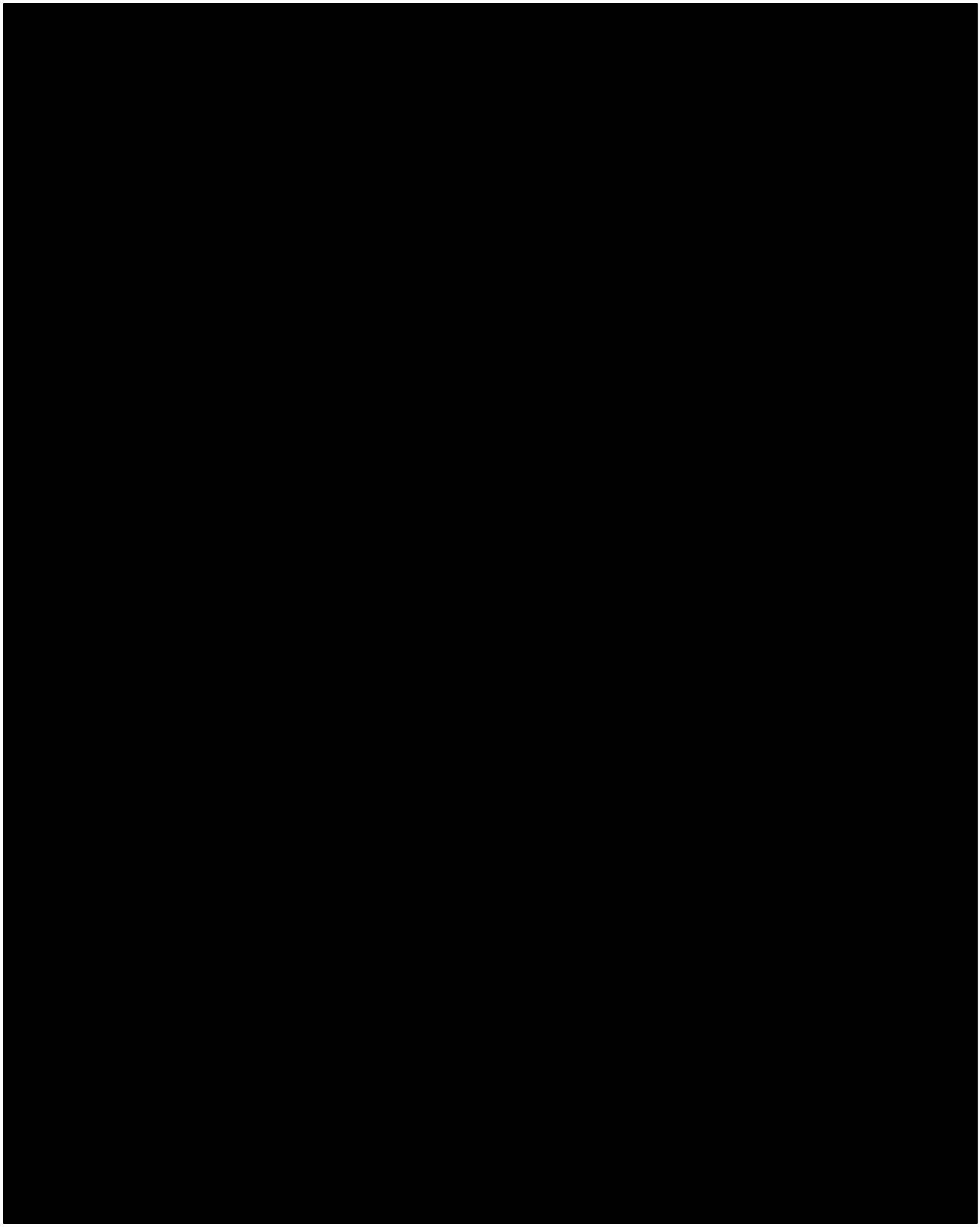


Exhibit 19 (Continued)

Exhibit 20

Exhibit 21

Exhibit 22

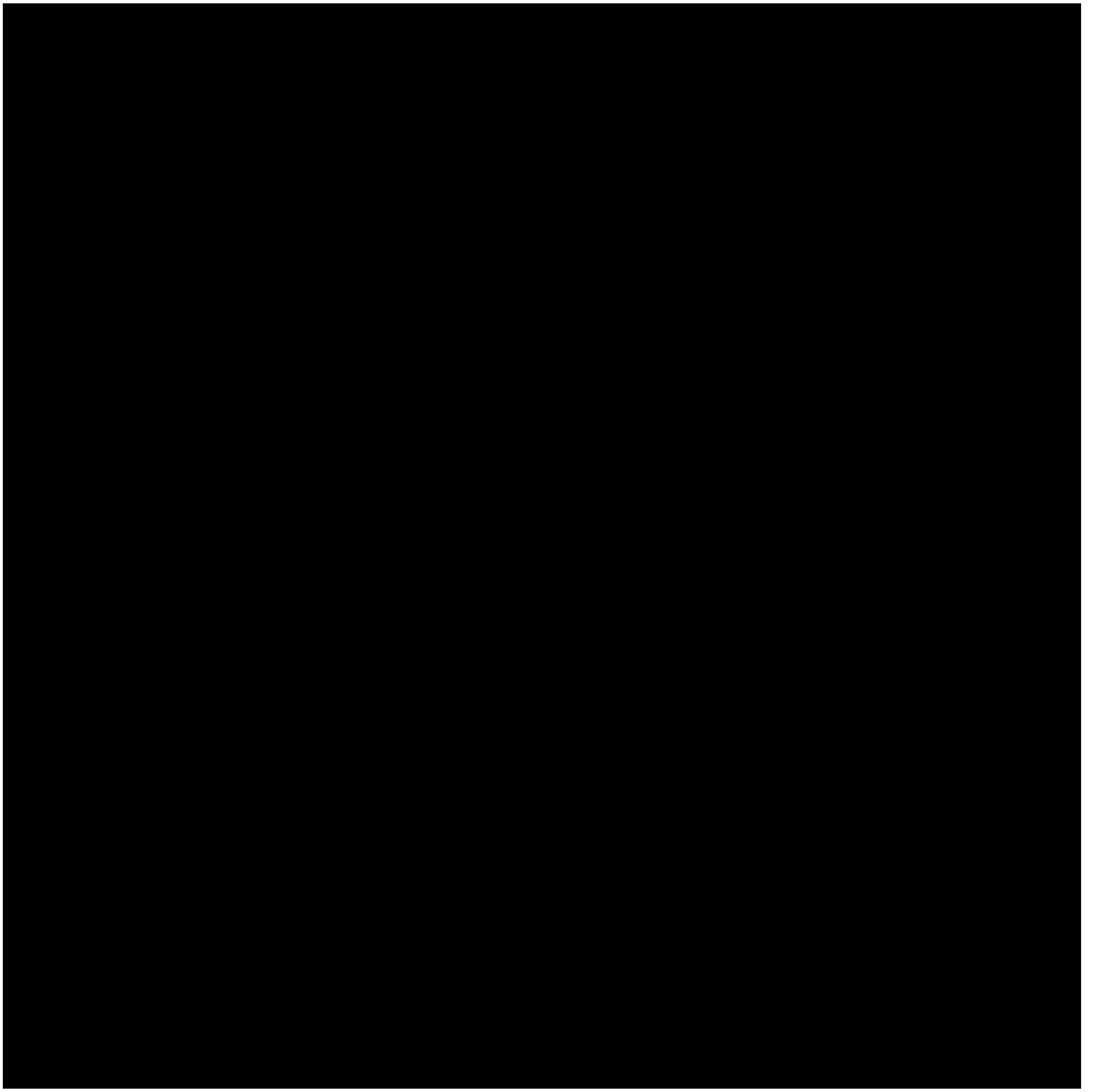


Exhibit 23

Exhibit 24

Exhibit 25

Exhibit 26

[redacted]

Exhibit 27

[redacted]

Exhibit 28

Published Service Fee Rate Reductions by Certain App Stores

Store	Platform	Year of rate reduction (effective)	Amount of Rate Reduction	Developers Receiving Rate Reduction	Percent of Putative Developer Class Members (if rate reduction were applied to Play)	Percent of Putative Developer Class Members' Spend (if rate reduction were applied to Play)
Amazon Appstore	Android	2018	30% to 20%	Movie and TV subscription app developers	[redacted]	
Amazon Appstore	Android	2021 (Q4)	30% to 20% (plus additional rebates as Amazon Web Services Credit)	Developers with less than $1M in sales in the previous calendar year		
Apple App Store	iOS	2016 (June)	30% to 15%	Subscriptions retained for 12 months or more		
Apple App Store	iOS	2016	30% to 15%	Premium subscription video developers		
Apple App Store	iOS	2021 (Jan)	30% to 15%	Developers with less than $1M in sales in the previous calendar year		
Microsoft Store	PC and XBOX	2015 (Jan)	Before 2015: 30%: 0-$25,000 sales 20%: $25,000+ sales	(No rate reductions)		
			After 2015: 30% flat rate	Developers with at least one app earning over $25,000 in sales received a rate increase		
Microsoft Store	PC and XBOX	2019 (Mar)	30% to 15%	Non-game, non-Xbox downloads via Microsoft Store search or a Microsoft Store Collection		
			30% to 5%	Non-game, non-Xbox downloads via developer's direct link and not through Microsoft Store Search or Microsoft Store Collection		
Microsoft Store	PC and XBOX	2020 (Jan)	5% to 15%	Non-game, non-Xbox downloads via developer's direct link and not through Microsoft Store Search or Microsoft Store Collection		
Microsoft Store	PC and XBOX	2021 (Aug)	30% to 12%	Non-Xbox Games		
		2021 (Jul)	15% to 0%	Non-game apps charging through third party payment platform		
One Store	Android	2018 (Jul)	30% to 20%	Developers who use One Store's payment platform		
			30% to 5%	Developers who use their own payment platform		
Steam	PC	2018 (Nov) announced	Before Nov 2018: 30%, with exceptions for small developers in Steam Direct program	All games: Revenue per app is considered, thresholds are total revenues starting from October 1st, 2018		
			After Nov 2018: 30%: $0-$10M			
			25%: $10M-$50M			
			20%: $50M+			

Notes:

[1] For each app store, the percentage of putative developer class members is calculated for the analogous developers if they were to receive the rate reduction in Play over the class period.
[2] The percentages for all Play subscription developers reflect the upper bounds that are shown for rate changes applied to subscribers of 1+ year.
[3] For Amazon Appstore and Apple App Store's 2021 small developers rate reduction, the percentage of putative developer class members who could potentially be affected by the policy is calculated as
(total developers whose annual revenue is <$1M at least once in the class period / total developers over the class period).
[4] For Microsoft Store rate increase in 2015, the percentage of putative developer class members who could potentially be affected by the policy is calculated as (total developers who own at least one app with spend>$25,000 / total developers over the class period).
[5] For Steam rate reduction in 2018, the percentage of putative developer class members who could potentially be affected by the policy is calculated as (total developers who have revenue per game in the applicable threshold / total developers over the class period). The percentage of total consumer spend is calculated as (aggregated game revenue in a rate bracket / total consumer spend over the class period).
[6] Participants in Apple's Video Partner Program in 2016 and Amazon's 2018 rate reduction program are identified as (i) owning an app in the Entertainment category are in Google's LRAP/LRAP++ program, or are Amazon, due to their Prime Video app.

Sources:

[1] App-level spend data, Developers, GOOG-PLAY-005535885 and GOOG-PLAY-010801689
[2] See Sources exhibit and this report's production for Bates numbers of deal contracts and app package names.

Exhibit 29

Fees for Payment Processing Service Providers

Payment Processor Base Rates (as of November 2021)

Payment Processing Service Provider	Base Rate (U.S.)
PayPal	2.59% + $0.49; 3.49% + $0.49
Braintree (owned by PayPal)	2.59% + $0.49
Stripe	2.9% + $0.30
Square	2.9% + $0.30; 3.5% + $0.15

Notes:

[1] Effective August 2, 2021, PayPal's base rate is 2.59% + $0.49 for online credit and debit card transactions. For Digital Payments, PayPal's base rate is 3.49% + 0.49 per transaction.

[2] Square's base rate for card-not-present payments is 2.9% + $0.30, and is applied to purchases through Square Online Store, Square Online Checkout, eCommerce API, or online invoice payments. If a card on file is used or the card details are entered manually, the base rate is 3.5% + $0.15.

[3] PayPal and Stripe offer Chargeback Protection services with an additional 0.4% charge per transaction.

Sources:

[1] "PayPal pricing," PayPal, https://www.paypal.com/us/business/pricing, accessed November 17, 2021.

[2] "PayPal Fee Changes: Effective August 2, 2021," PayPal, https://www.paypalobjects.com/marketing/ua/pdf/US/en/feepages-080221.pdf, accessed November 17, 2021.

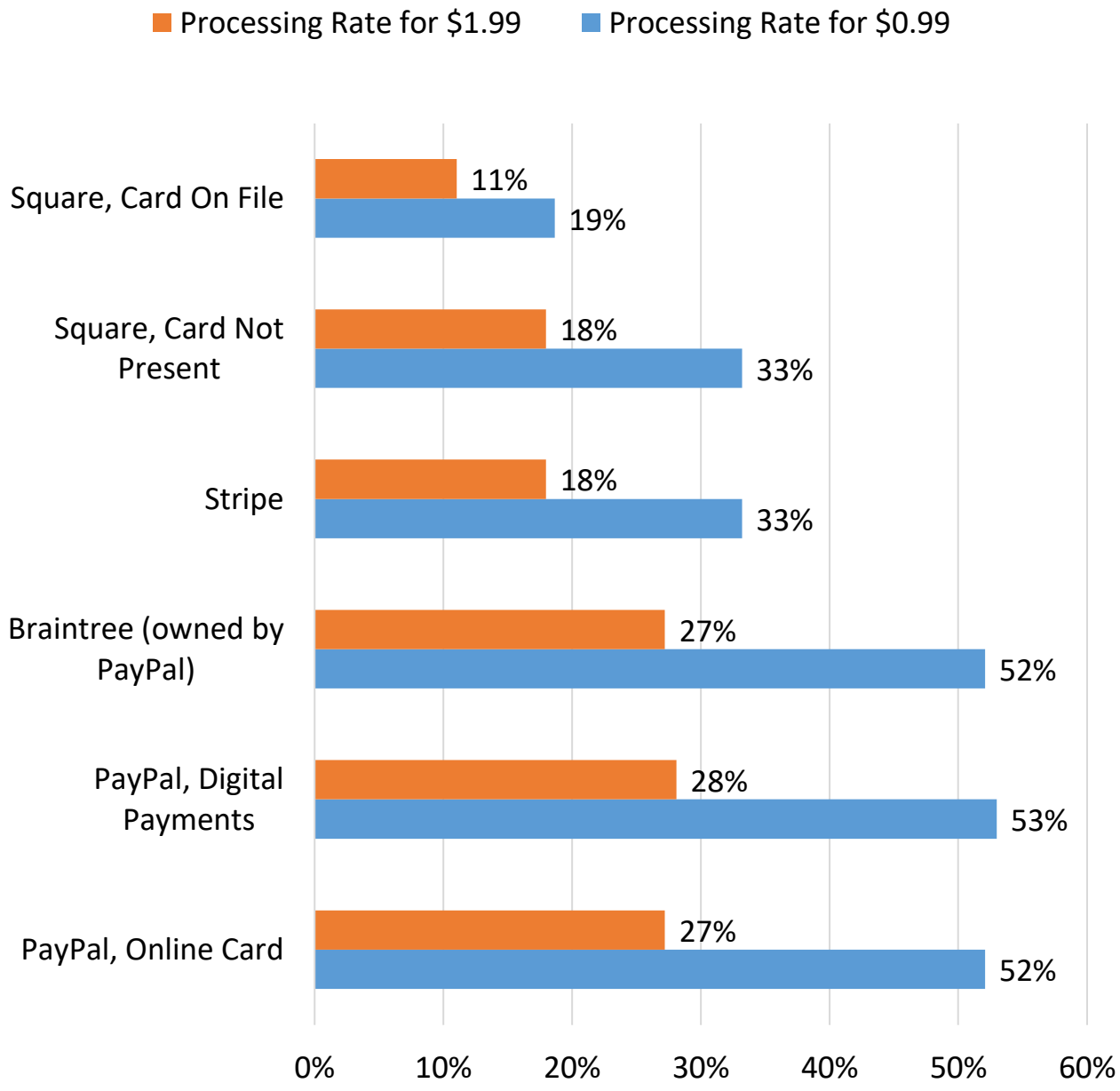
[3] "Pricing," Braintree, https://www.braintreepayments.com/braintree-pricing, accessed November 17, 2021.

[4] "Pricing built for businesses of all sizes," Stripe, https://stripe.com/pricing, accessed November 17, 2021.

[5] "Understanding Square processing fees," Square, https://squareup.com/us/en/payments/our-fees, accessed November 17, 2021.

Exhibit 30

Effective Payment Processing Rates of Alternative Processors at Low Price Points



Source: Exhibit 29.

Exhibit 31

Exhibit 32

Exhibit 33

Percent Reductions from Price Point to Price Point

	Percent Reduction
$5.99 to $4.99	17%
$4.99 to $3.99	20%
$3.99 to $2.99	25%
$2.99 to $1.99	33%
$1.99 to $.99	50%

Source:

[1] Google Transactions Data, GOOG-PLAY-007203251

Exhibit 34

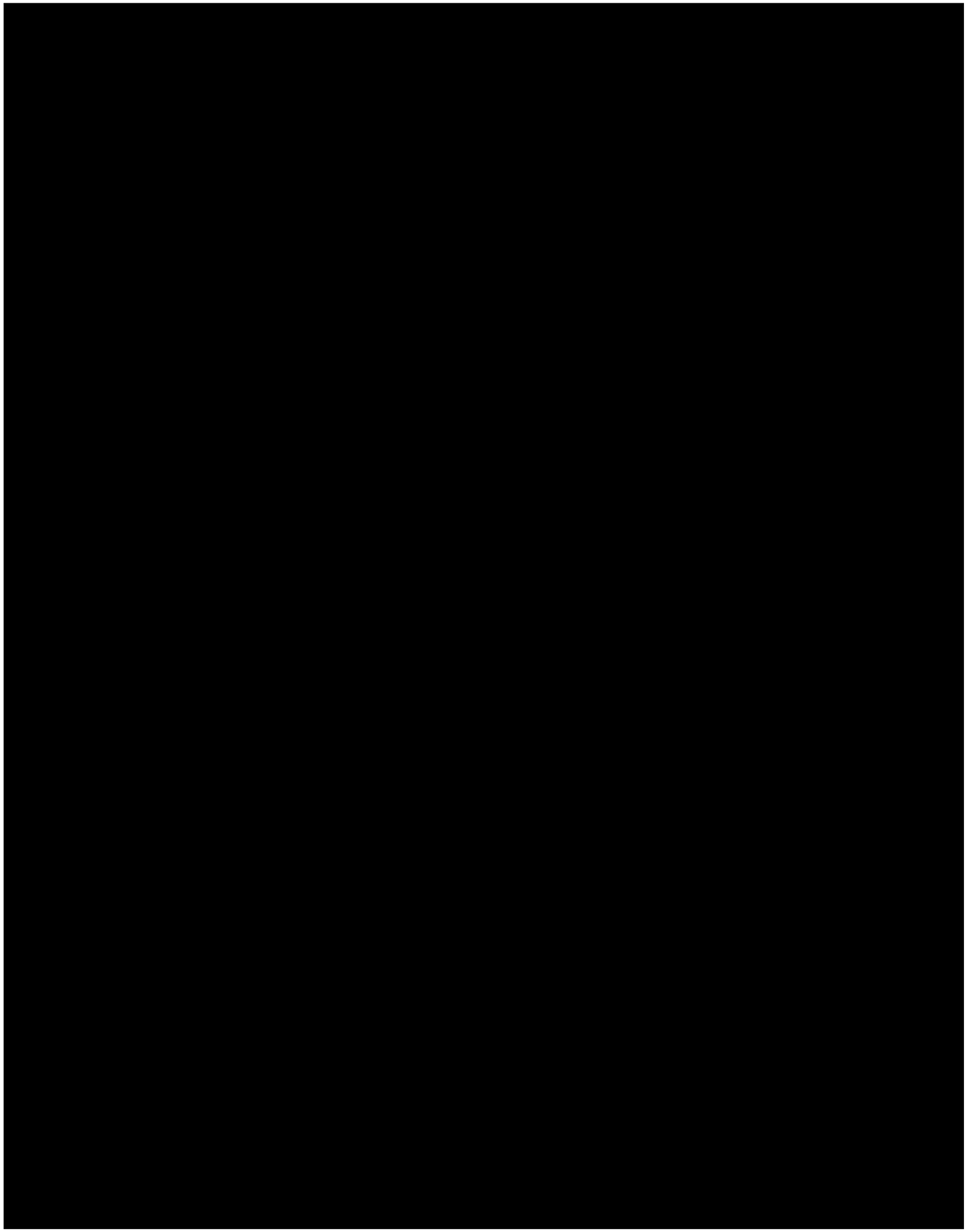
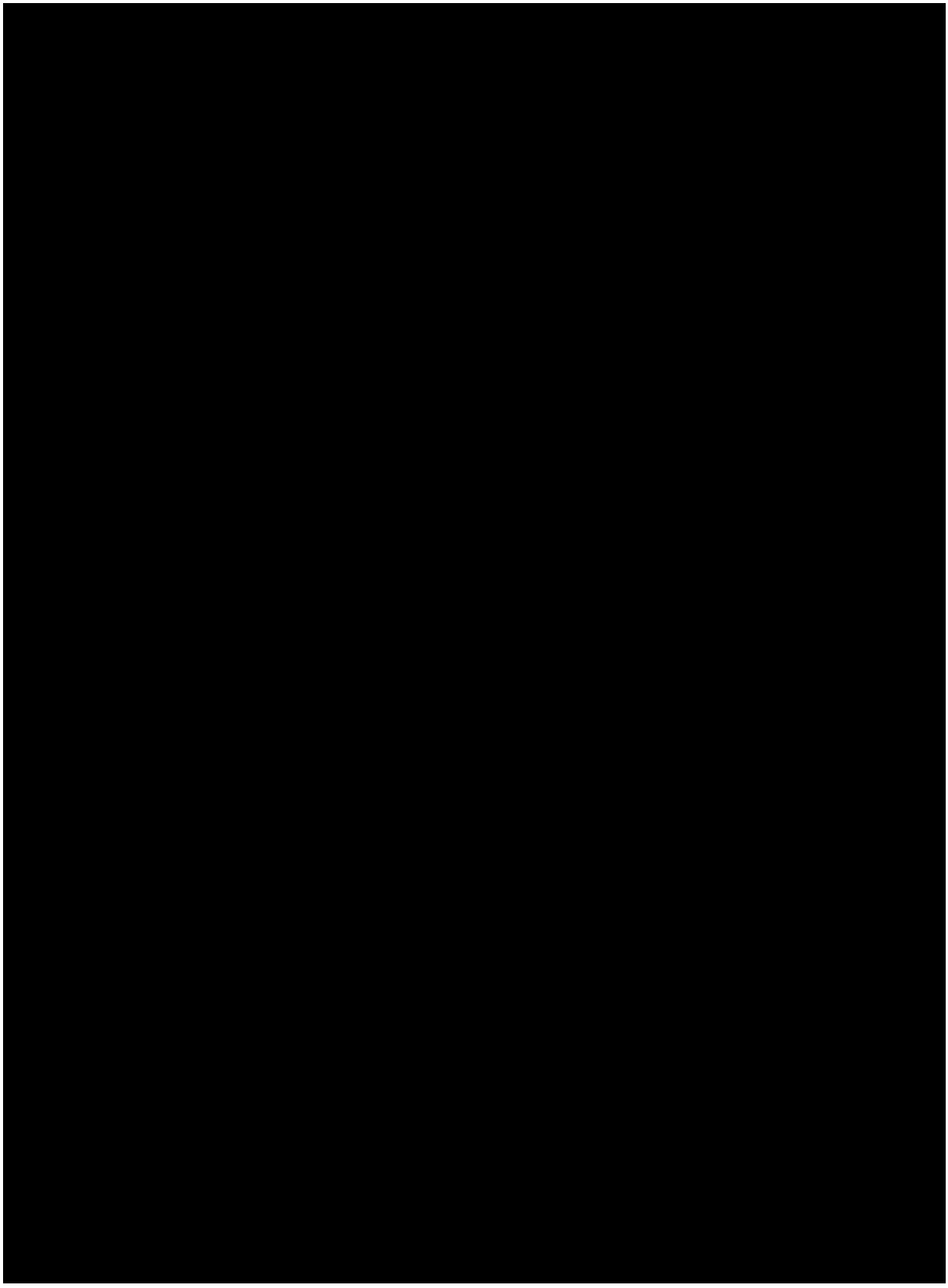


Exhibit 35



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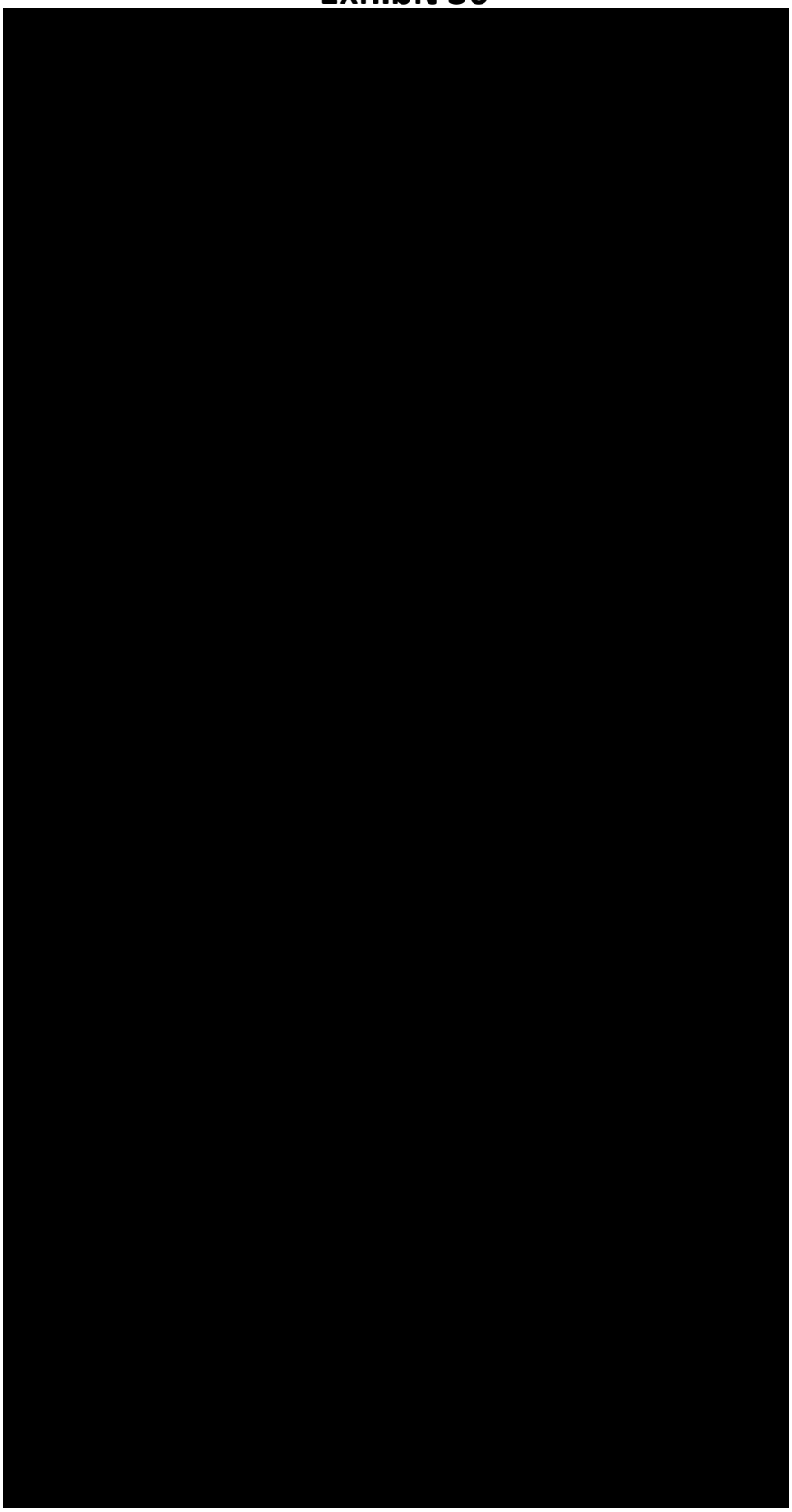


Exhibit 37

Exhibit 38

Exhibit 39

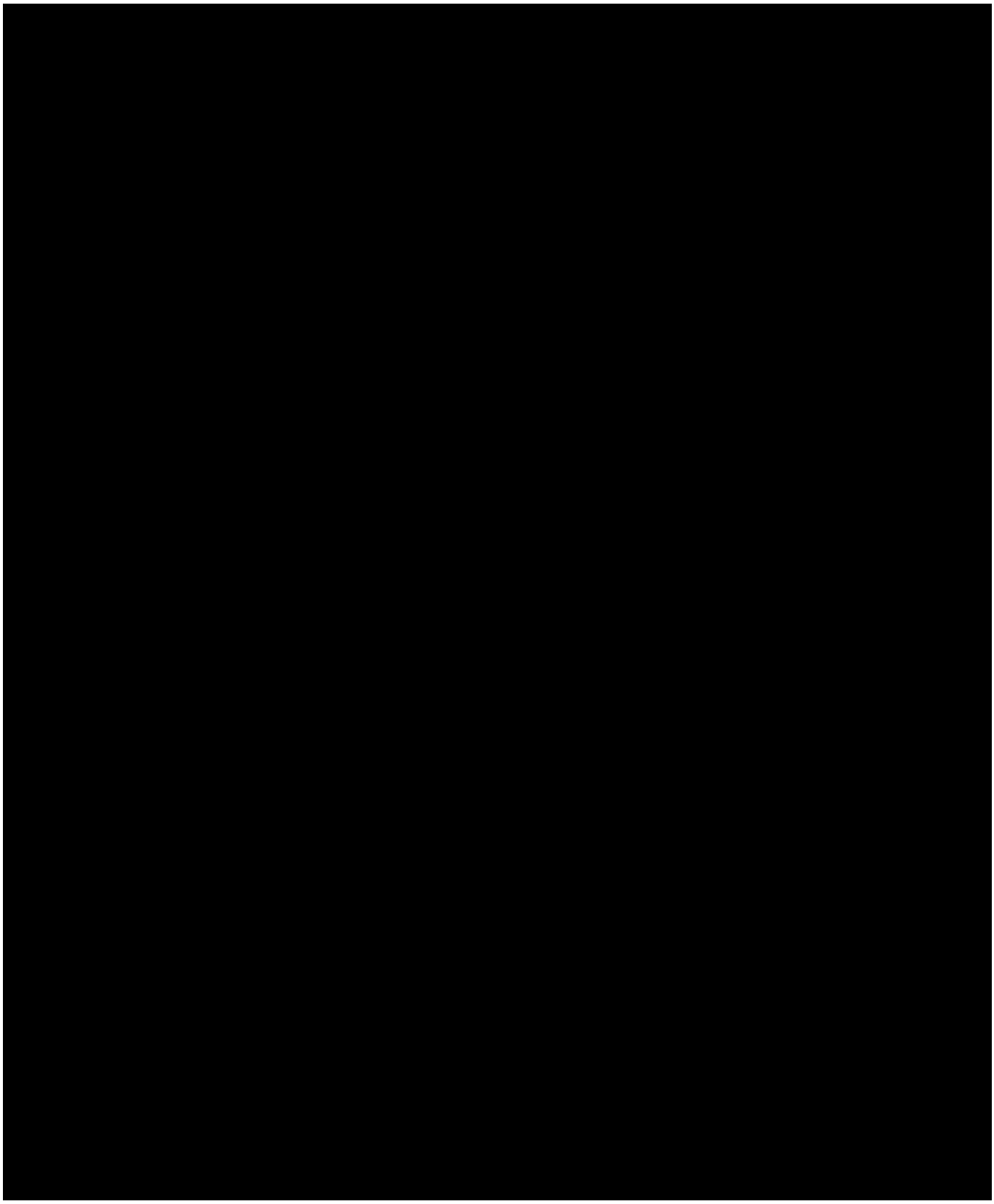


Exhibit 40

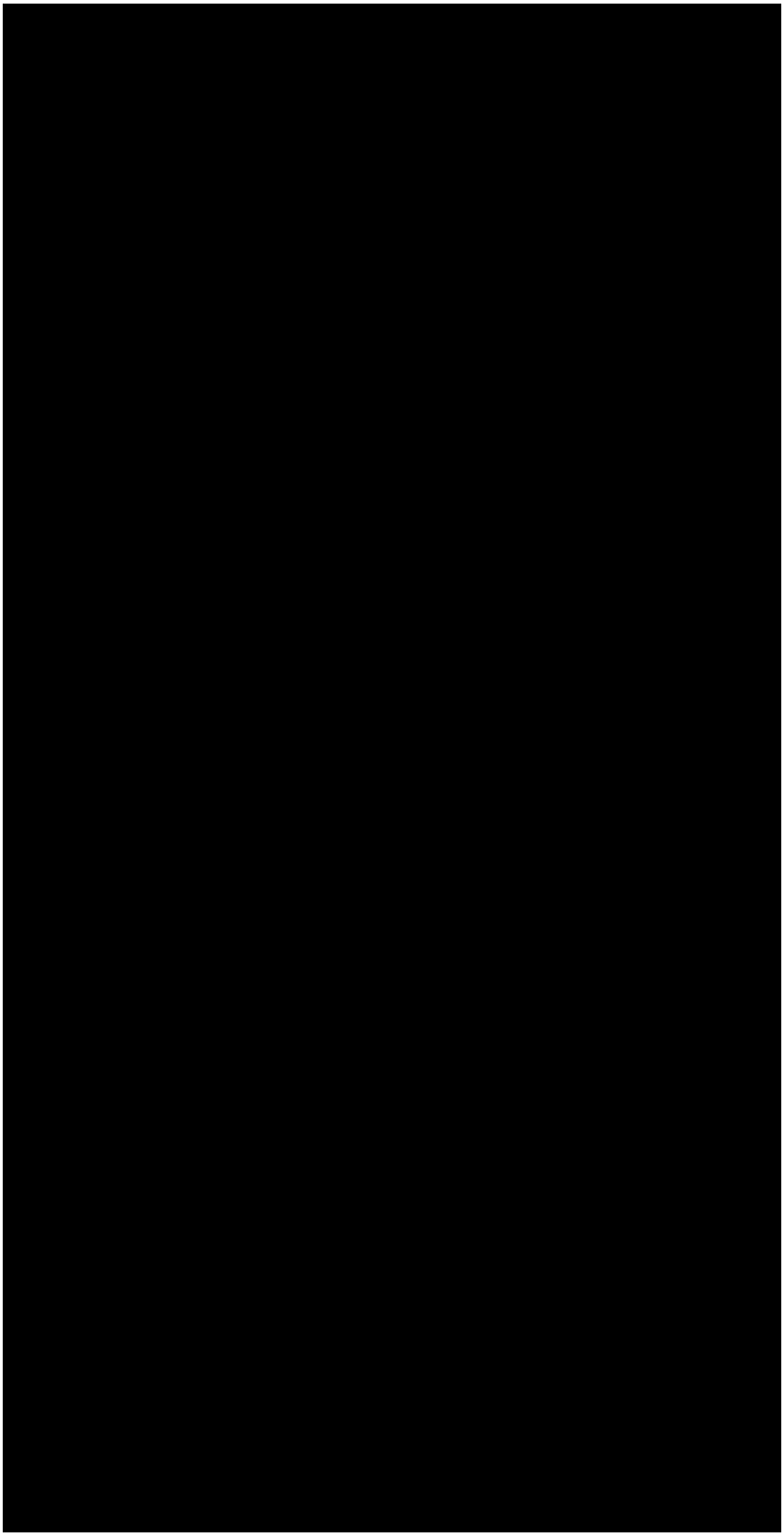
Exhibit 41

Exhibit 42

Exhibit 43

Exhibit 44

Exhibit 45



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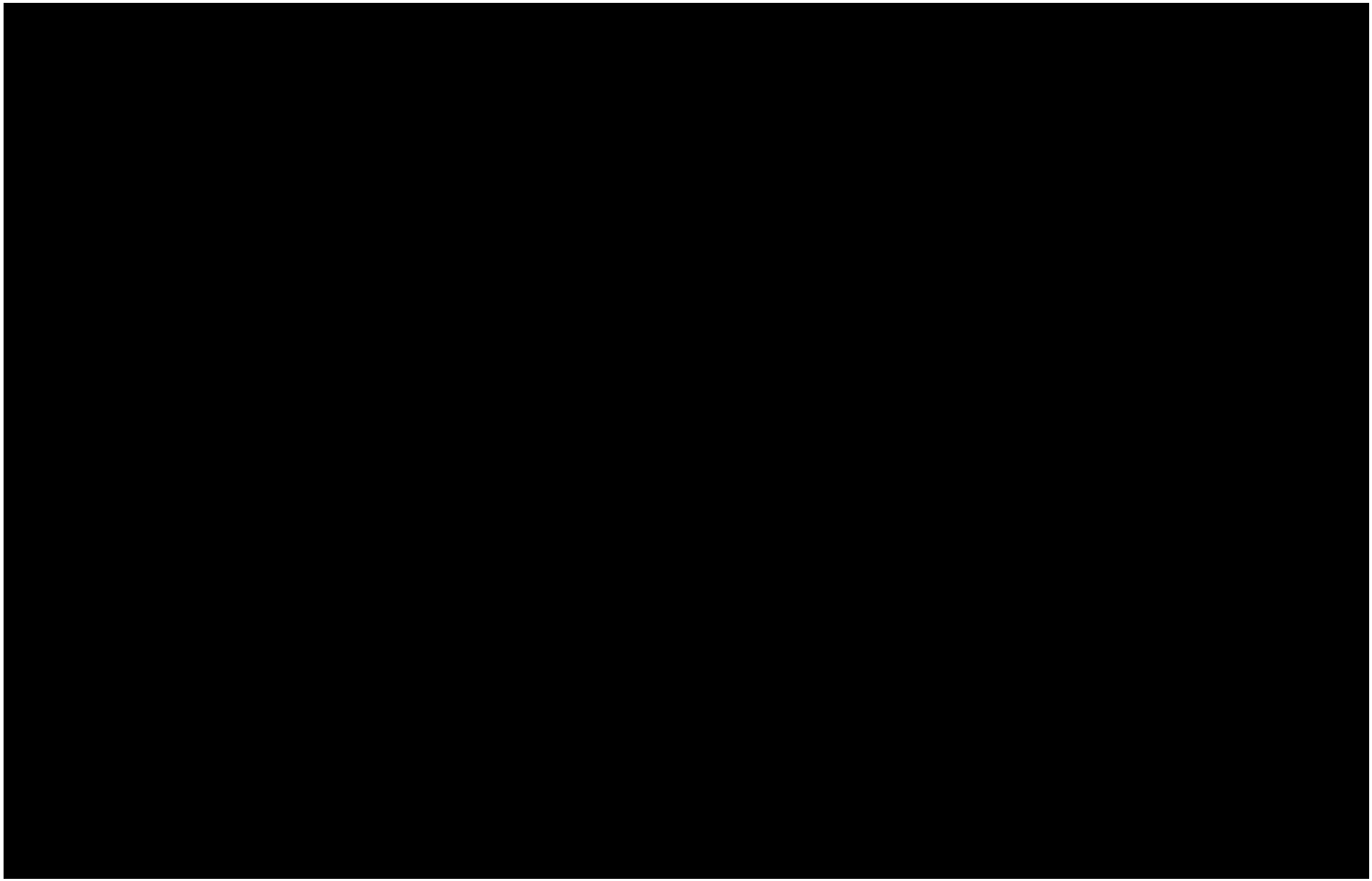


Exhibit 47

Exhibit 48

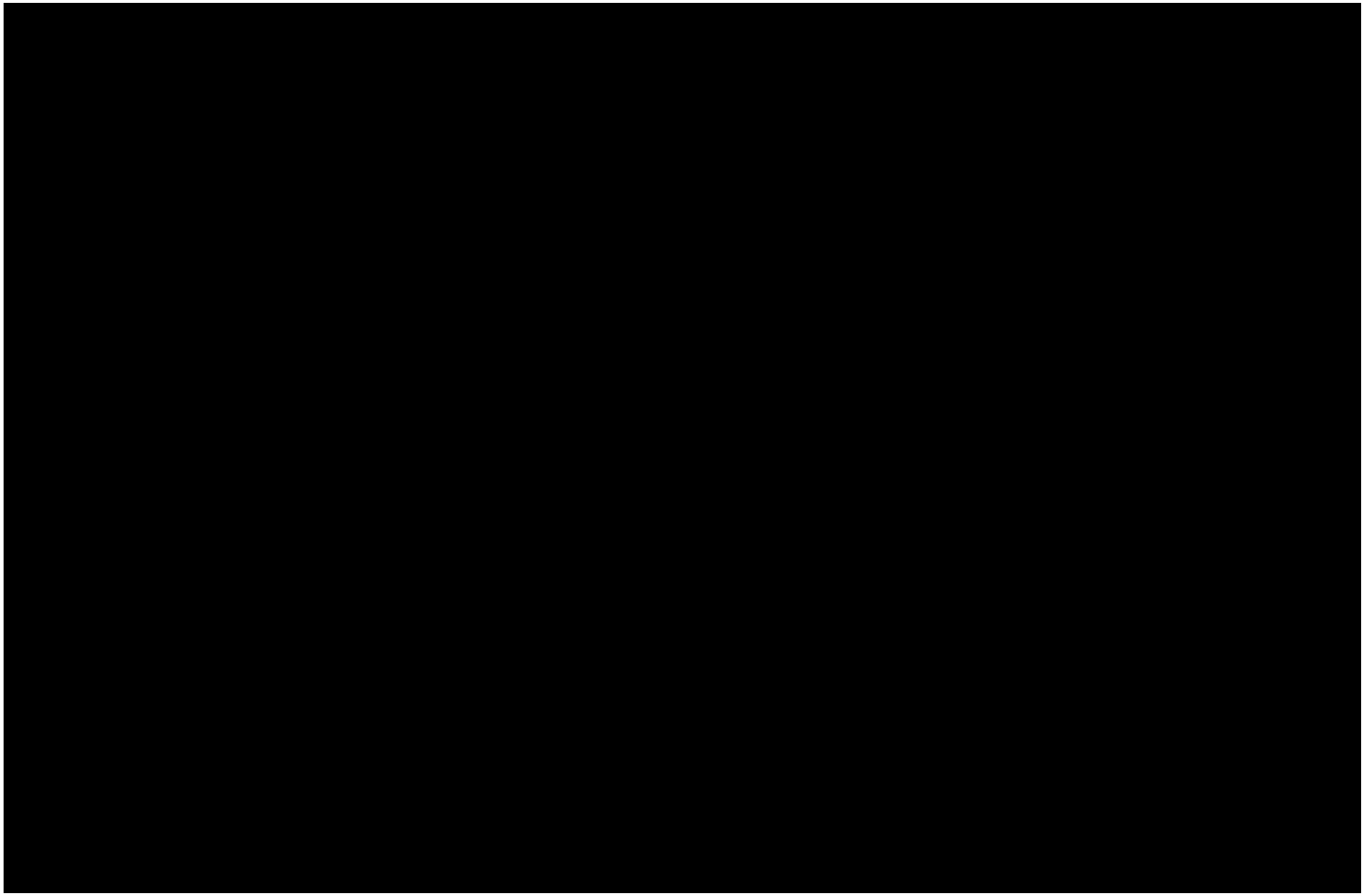


Exhibit 49

Exhibit 50

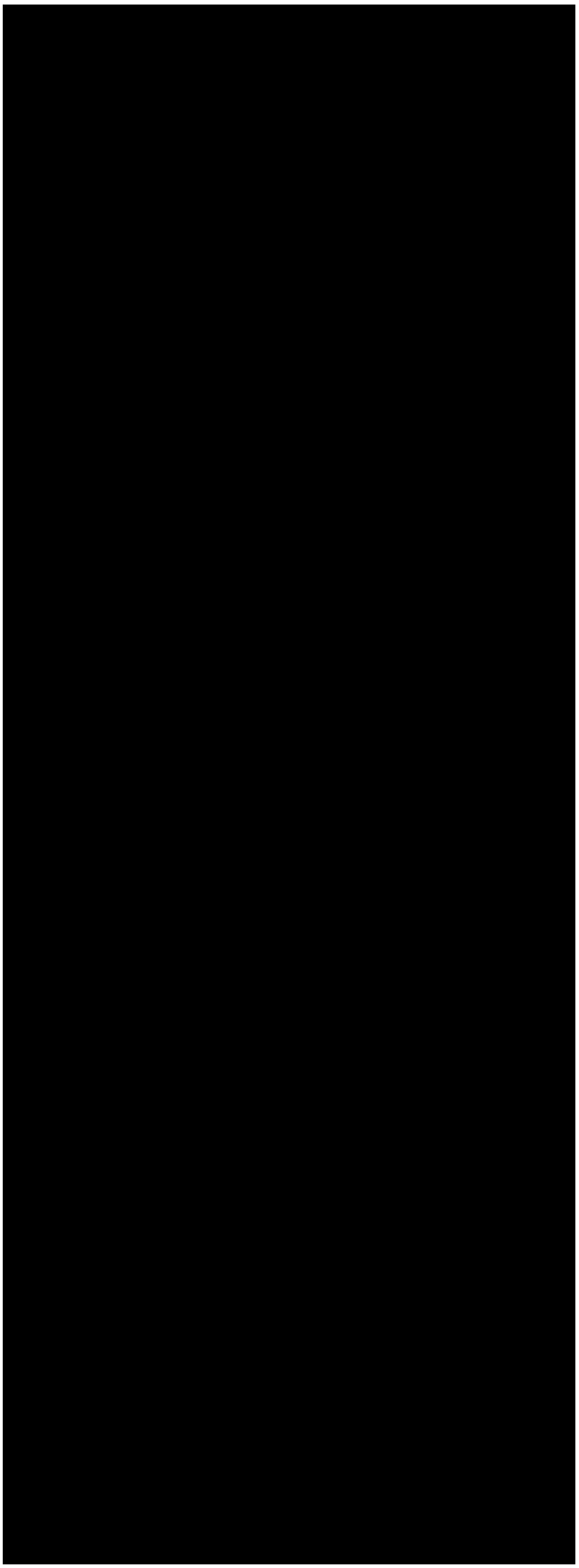
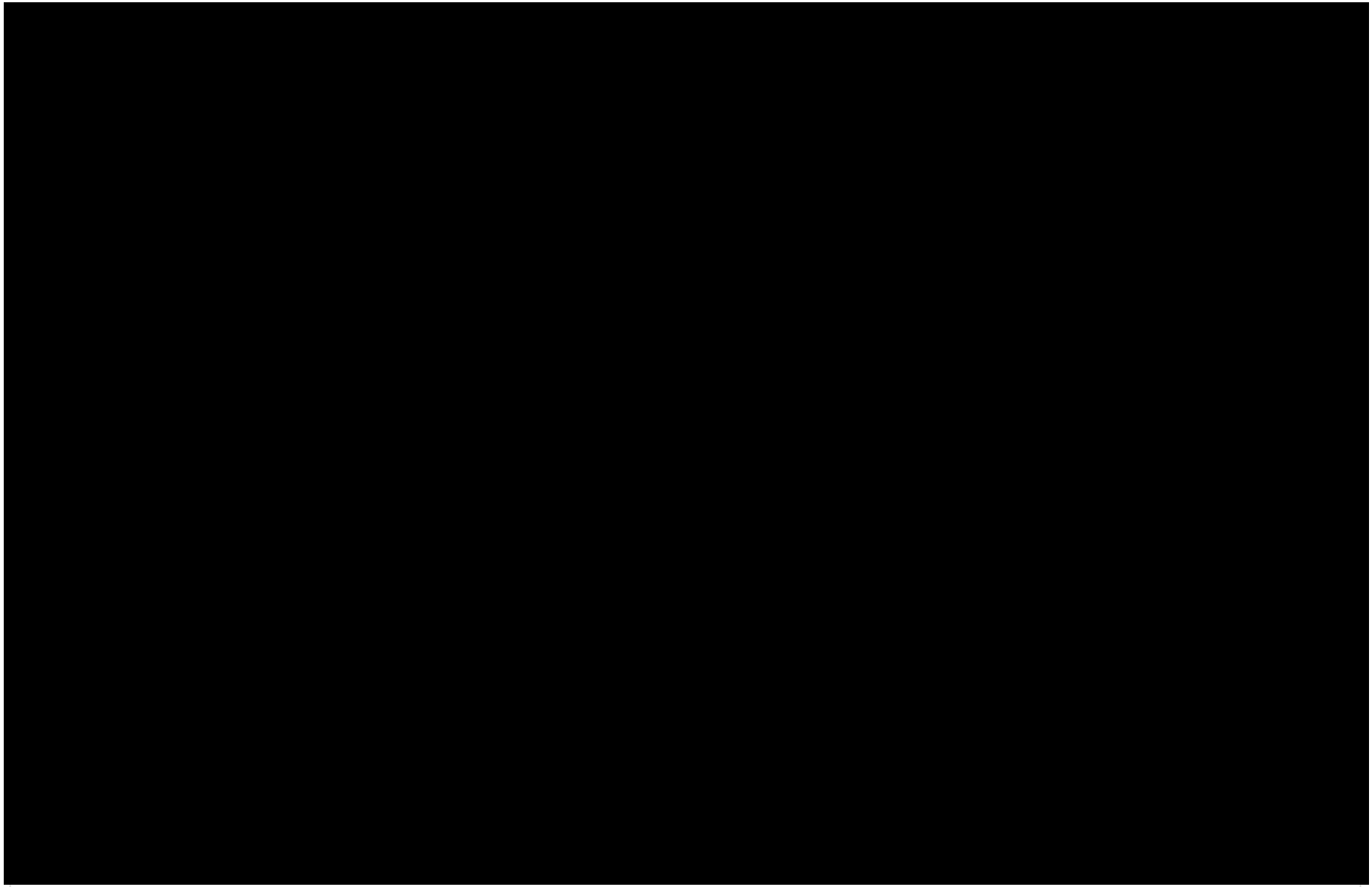


Exhibit 51



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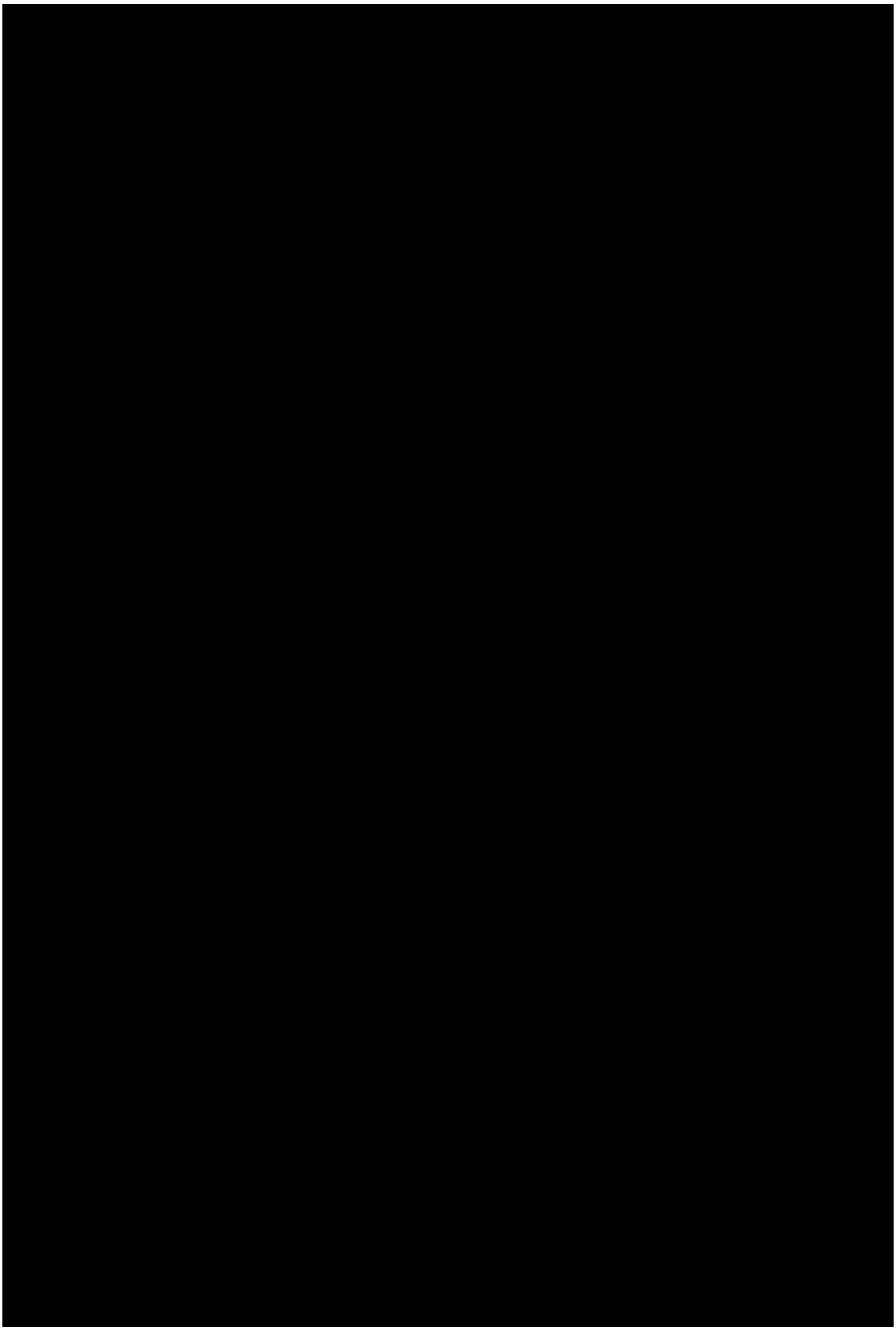
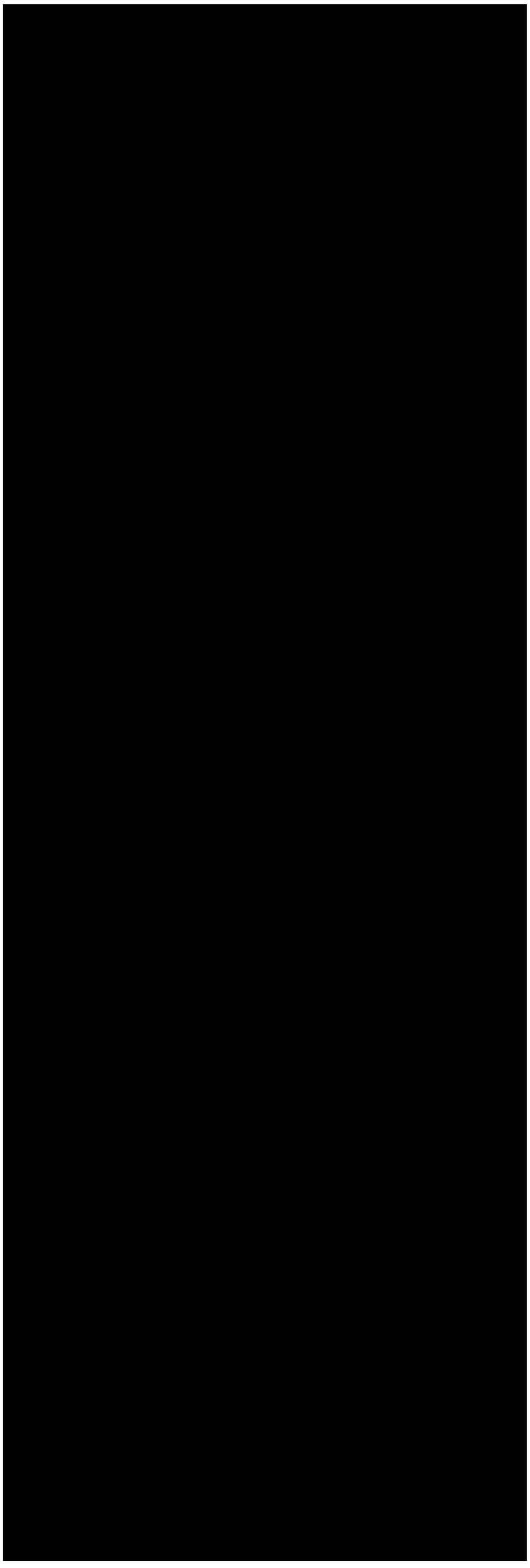


Exhibit 53

Exhibit 54

Exhibit 55



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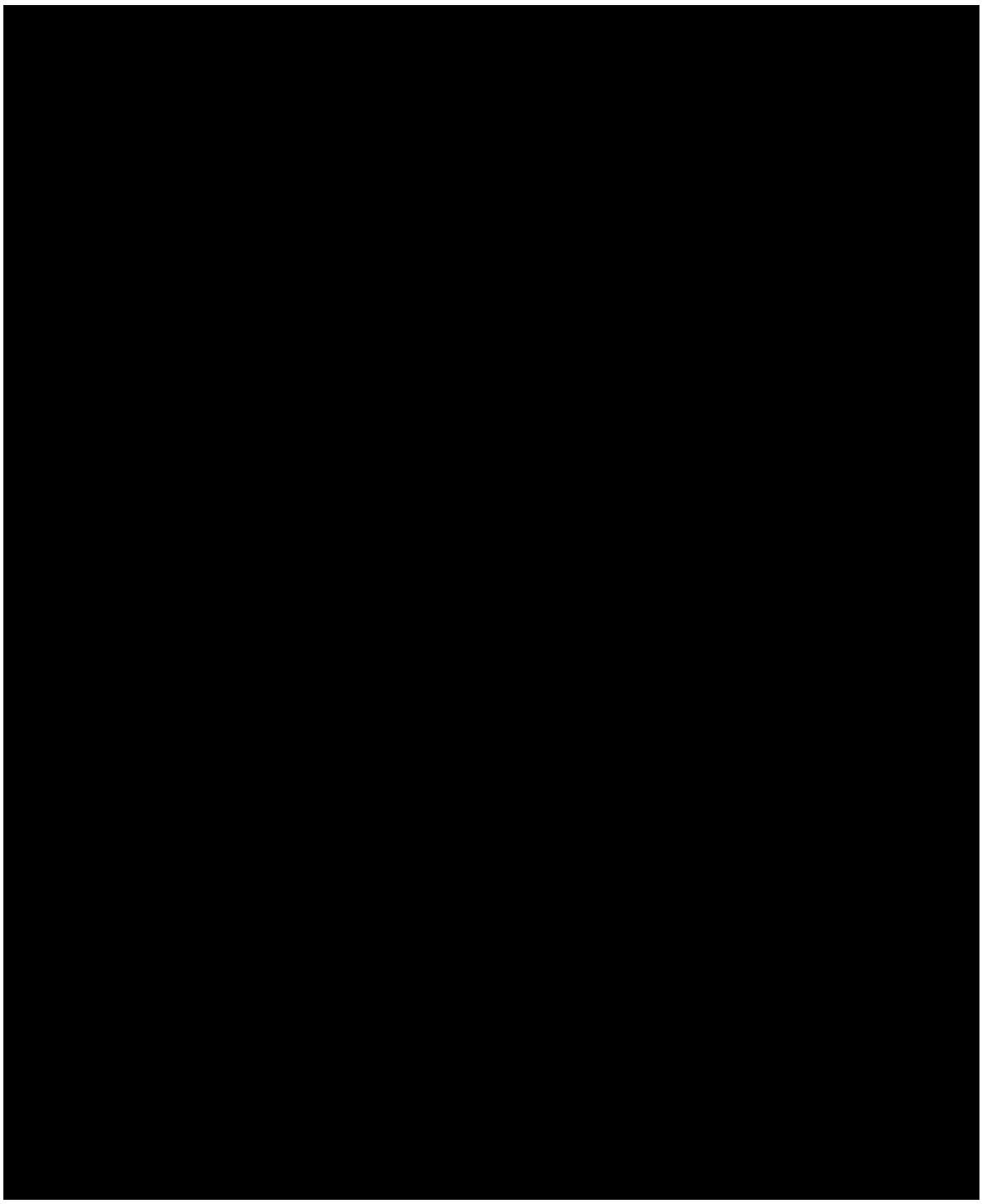

Exhibit 57

Exhibit 58

Exhibit 59

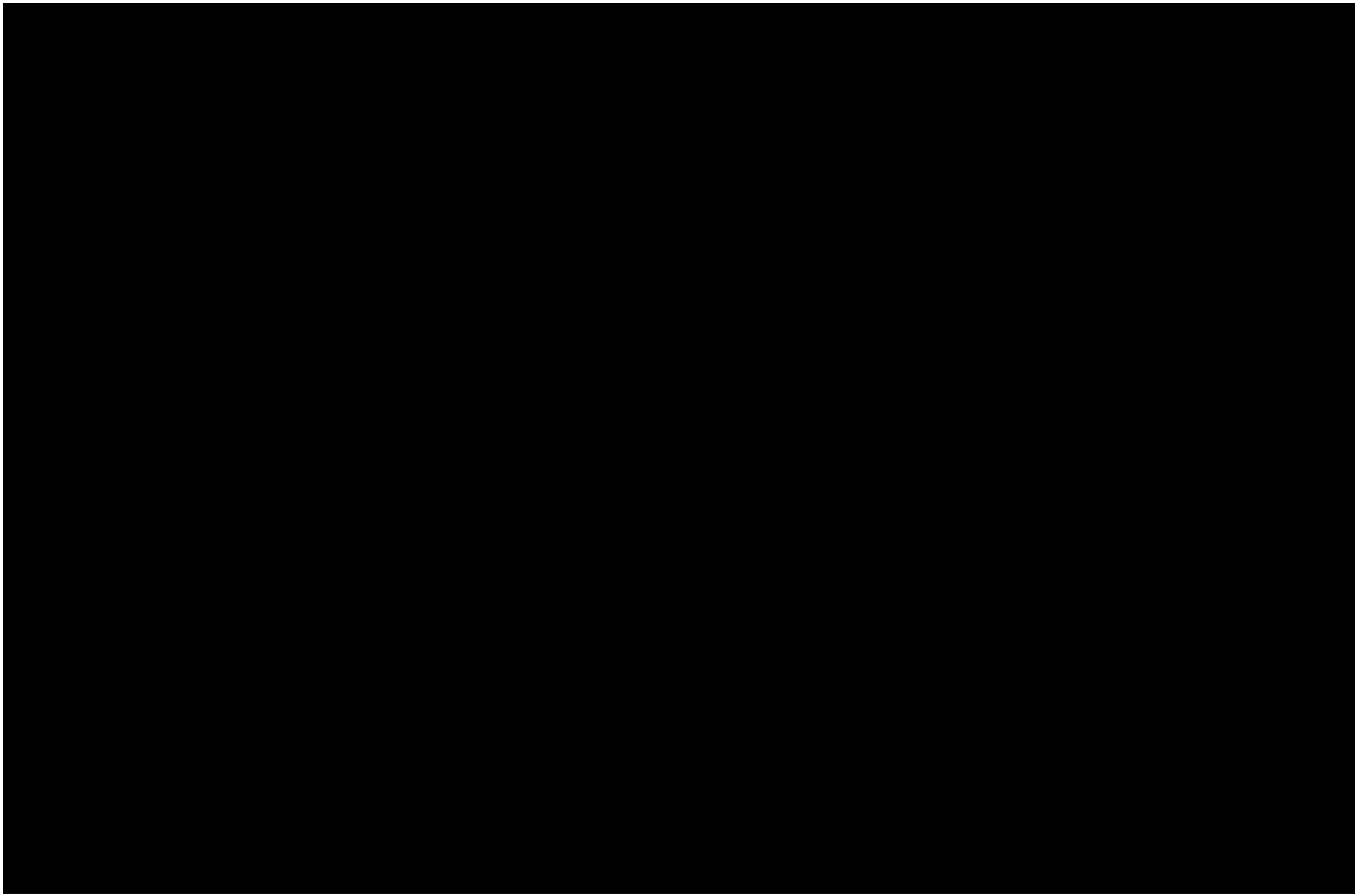

Exhibit 60

Exhibit 61

Exhibit 62

Exhibit 63

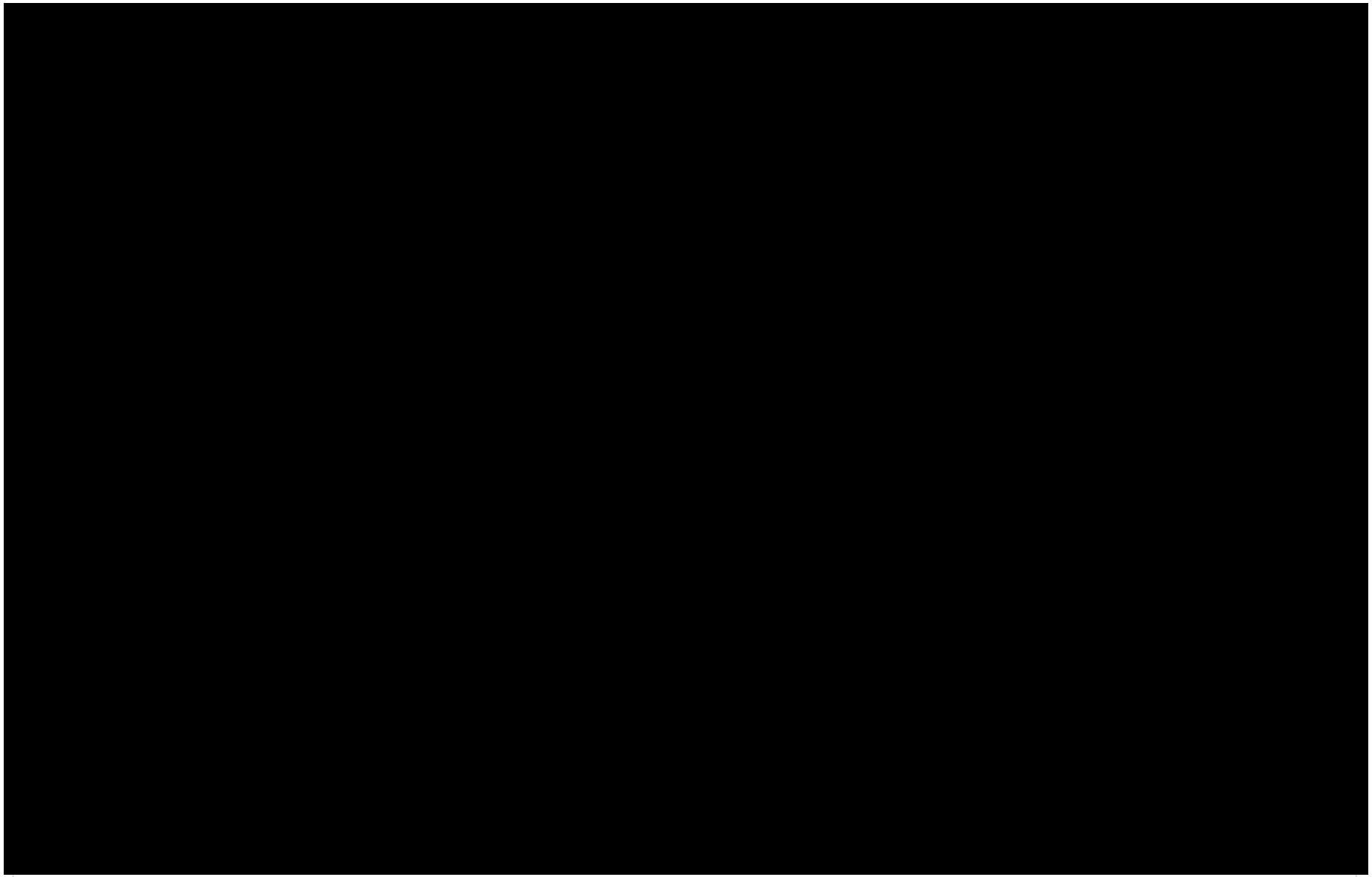

Exhibit 64